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THE FORAMINIFERA OF THE ATLANTIC OCEAN

PART 5. CHILOSTOMELLIDAE AND GLOBIGERINIDAE

BY

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INTRODUCTION.

This paper is the fifth part of a work the intent of which is to describe and illustrate the Foraminifera of the Atlantic Ocean, especially those species which have occurred in the waters adjacent to the shores of the United States, including the whole of the Gulf of Mexico and the Carribbean Sea, that being the area in which most of the work of the vessels of the United States engaged in dredging work has been done. This part includes the families Chilostomellidae and Globigerinidae. The first part, issued in 1918, included the family Astrorhizidae, the second part, issued in 1920, included the family Lituolidae, the third part, issued in 1922, included the family Textulariidae; and the fourth part, issued in 1923, included the family Lagenidae. Other parts to be issued will include the families Rotaliidae, Nummulitidae, and Miliolidae.

JOSEPH AUGUSTINE CUSHMAN.

TABLE OF CONTENTS.

	Page.
Introduction	1
Family 6. Chilostomellidae	1
Genus Chilostomella	1
ovoidea	2
Genus Allomorphina	3
trigona	4
Genus Seabrookia	4
earlandi	5
Family 7. Globigerinidae	5
Genus Globigerina	6
bulloides	7
var. triloba	7
dubia	8
subcretacea	8
digitata	11
dutertrei	11
inflata	12
pachyderma	14
rubra	15
conglobata	18
sacculifera	21
helicina	24
aequilateralis	25
concinna	27
ocellata	27
diplostoma	27
quadriloba	27
regularis	28
linneiana	28
Genus Orbulina	28
universa	28
porosa	32
Genus Hastigerina	33
pelagica	33
Genus Candeina	34
nitida	35
Genus Sphaeroidina	36
bulloides	36
dehiscens	38
Genus Pullenia	40
sphaeroides	40
quinqueloba	42
obliquiloculata	43
Explanation of plates	46
Index	55

THE FORAMINIFERA OF THE ATLANTIC OCEAN.

CHILOSTOMELLIDAE AND GLOBIGERINIDAE.

By Joseph Augustine Cushman,
Of Sharon, Massachusetts.

INTRODUCTION.

This fifth part of the work on the Atlantic Foraminifera deals with the Chilostomellidae and Globigerinidae. The same arrangement of data as that used in the earlier parts is here followed. As most of the species are pelagic at some time in their life history the distribution shows less well-marked faunal areas than in the bottom-living forms.

SYSTEMATIC PART.

A systematic presentation of the various groups follows:

Family 6. CHILOSTOMELLIDAE.

Test calcareous, conspicuously punctate, chambers usually somewhat inflated, irregularly coiled, the last-formed chamber in the various genera making up a large portion of the last-formed volution; aperture usually a curved opening between the base of the chamber and its predecessor, sometimes terminal.

This family is represented in the present oceans by three genera, *Chilostomella*, in which each chamber takes up 180° of the periphery as added; *Allomorphina*, in which it takes up typically 120°; and *Seabrookia*, which has a somewhat more definitely coiled appearance.

As *Chilostomella* is somewhat alternating in dorsal view, it has been placed near the Textulariidae, but in many ways the family seems nearer the Globigerinidae.

The family also includes the genus *Ellipsoidina* Seguenza, which occurs in the later Tertiary, but is not known as a Recent genus.

Genus CHILOSTOMELLA Reuss, 1850.

Chilostomella Reuss (type, *C. ovoidea* Reuss), Denkschr. Akad. Wiss. Wien, vol. 1, 1850, p. 379.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 436.—Chapman, The Foraminifera, 1902, p. 182.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 2.

Description.—Test composed of a series of chambers in a coil, each chamber making a half coil of 180° and embracing so that but a small part of the preceding chamber is visible from the exterior; wall smooth, finely perforate, either thin and transparent or thick and opaque; aperture at the inner margin of the ventral face of the chamber curved, often with a slightly upward-turned lip.

This genus has been described as composed of an alternating series of chambers, but in reality it seems to be a coiled test in which each chamber takes up 180° of the volution. The peculiar form of the test is distinctive, as is the form of the aperture. *Chilostomella ovoidea* Reuss is thin walled and very widely distributed; *C. grandis* Cushman is known as yet only from the Pacific about the Philippines. The species described from the London Clay as *Lagena* (*Obliquina oviformis*) Sherborn and Chapman [1] seems to be a species of *Chilostomella* and should be known as *Chilostomella oviformis* (Sherborn and Chapman). The geological range of the genus therefore is from the Eocene to the present oceans.

From the very wide distribution of *C. ovoidea* and its thin test it might be supposed to be pelagic, but little is known of it except as a bottom-living species.

CHILOSTOMELLA OVOIDEA Reuss.

Plate 1, figs. 1–10.

Chilostomella ovoidea Reuss, Denkschr. Akad. Wiss. Wien, vol. 1, 1850, p. 380, pl. 48, fig. 12.—H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 280, pl. 8, figs. 11, 12; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 436, pl. 55, figs. 12–23; Journ. Roy. Micr. Soc., 1887, p. 901.—Sherborn and Chapman, Journ. Roy. Micr. Soc., 1889, p. 485, pl. 11, fig. 12.—Pearcey, Trans. Glasgow Nat. Hist. Soc., vol. 2, 1890, p. 177.—Wright, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 476.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 305, pl. 9, figs. 1, 2.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 25, 1894, p. 53, pl. 9, figs. 512–516; Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 50.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 402.—Millett, Journ. Roy. Micr. Soc., 1901, p. 2, pl. 1, figs. 2, 3.—Goddard, Rec. Austr. Mus., vol. 6, 1905–7, p. 307.—Sidebottom, Mem. Proc. Manchester Lit. Philos. Soc., vol. 54, No. 16, 1910, p. 14.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 2, pl. 1, figs. 1–5.—Mestayer, Trans. New Zealand Inst., vol. 48, 1916, p. 129.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 129.—Cushman, Proc. U. S. Nat. Mus., vol. 56, 1919, p. 621; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 283.

Description.—Test composed of several chambers in a coil, each chamber 180° from the preceding, the chambers all visible from the dorsal side, but the two last-formed ones making up nearly the whole surface of the test; chambers increasing very rapidly in size as

[1] Journ. Roy Micr. Soc., 1886, p. 745, pl. 14, figs. 19 *a–d*.

added, the last-formed one the largest and covering most of the preceding ones; sutures not depressed, rather indistinct; wall smooth, translucent, usually very thin and conspicuously punctate; aperture a curved, somewhat arched opening between the base of the chamber and the preceding one, often with a slightly thickened somewhat flaring lip.

Length up to 1 mm.

Distribution.—This species seems to have a very wide distribution in both tropical and temperate seas and at considerable depths. It has many characters which seem to indicate a possibility for pelagic condition. It is a very thin-walled species compared with *Chilostomella grandis* Cushman, which is certainly a bottom-living form. There are numerous *Albatross* records, as the accompanying table shows, and the species is also known from the eastern Atlantic, especially off the British Isles. It occurs also in the Indo-Pacific at scattered stations.

Chilostomella ovoidea—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19161	U.S.N.M.	5	D2035...	39 26 16 N.; 70 02 37 W..	1,362	.....	glob. oz.....	Few.
19140	U S N M.	10+	D2036...	38 52 40 N ; 69 24 40 W..	1,735	38.0	glob. oz.....	Abundant.
19141	U.S.N.M.	1	D2038...	38 30 30 N.; 69 08 25 W..	2,033	.....	glob. oz.....	Rare.
19142	U.S.N.M.	1	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Rare.
19143	U.S.N.M.	1	D2052...	39 40 05 N.; 69 21 25 W..	1,098	45.0	glob. oz.....	Rare.
19144	U.S.N.M.	1	D2063...	42 23 00 N.; 66 23 00 W..	141	46.0	s., crs. g.....	Rare.
19145	U.S.N.M.	1	D2099...	37 12 20 N.; 69 39 00 W..	2,949	.....	glob. oz.....	Rare.
19146	U.S.N.M.	2	D2105...	37 50 00 N.; 73 03 50 W..	1,395	41.0	glob. oz.....	Rare.
19147	U.S.N.M.	2	D2144...	9 49 00 N.; 79 31 30 W..	896	.....	gn. m.....	Rare.
19148	U.S.N.M.	9	D2150...	13 34 45 N.; 81 21 10 W..	382	45.8	wh. crs. s....	Common.
19149	U.S.N.M.	2	D2160...	23 10 31 N.; 82 20 37 W..	167	.....	co.....	Rare.
19150	U.S.N.M.	2	D2174...	38 15 00 N.; 72 03 00 W..	1,594	.....	gy. m.....	Rare.
19151	U.S.N.M.	1	D2192...	39 46 30 N.; 70 14 45 W..	1,060	38.6	gy. oz.....	Rare.
19152	U.S.N.M.	1	D2196...	39 35 00 N.; 69 44 00 W..	1,230	38.0	gn. m.....	Rare.
19153	U.S.N.M.	1	D2202...	39 38 00 N.; 71 39 45 W..	515	39.1	gn. m.....	Rare.
19154	U.S.N.M.	1	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Rare.
19155	U.S.N.M.	1	D2217...	39 47 20 N.; 69 34 15 W..	924	38.1	gy. m.....	Rare.
19156	U.S.N.M.	1	D2223...	37 48 30 N.; 69 43 30 W..	2,516	36.4	glob. oz.....	Rare.
19157	U.S.N.M.	5	D2228...	37 25 00 N.; 73 06 00 W..	1,582	36.8	br. m.....	Few.
19158	U.S.N.M.	1	D2352...	22 35 00 N.; 84 23 00 W..	463	45.0	wh. co.....	Rare.
19159	U.S.N.M.	3	D2395...	28 36 15 N.; 86 50 00 W..	347	44.1	gy. m.....	Few.
19160	U.S.N.M.	1	D2534...	40 01 00 N.; 67 29 15 W..	1,234	37.8	gy. oz.....	Rare.
19162	U.S.N.M.	1	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Rare.
19163	U.S.N.M.	1	D2542...	40 00 15 N.; 70 42 20 W..	129	47.2	s., brk. sh...	Rare.
19164	U.S.N.M.	2	D2550...	39 44 30 N.; 70 30 45 W..	1,081	38.5	br. m.....	Rare.
19165	U.S.N.M.	4	D2552...	39 47 07 N.; 70 35 00 W..	721	39.6	gy. oz.....	Few.
19166	U.S.N.M.	2	D2555...	39 53 00 N.; 71 32 00 W..	136	47.7	gn. m., s.....	Rare.
19167	U.S.N.M.	2	D2564...	39 22 00 N.; 71 23 30 W..	1,390	37.3	gy. oz.....	Rare.
19168	U.S.N.M.	1	D2748...	39 31 00 N.; 71 14 30 W..	1,163	37.8	gy. m., for...	Rare.
19169	U.S.N.M.	1	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Rare
19170	U.S.N.M.	1	D2756...	3 22 00 S.; 37 49 00 W..	417	40.5	gy. sp.....	Rare.
19171	U.S.N.M.	1	H86.....	12 58 40 N.; 62 48 00 W..	1,635	.....	bn. m.....	Rare.

Genus ALLOMORPHINA Reuss, 1850.

Allomorphina Reuss (type, *A. trigona* Reuss), Denkschr. Akad. Wiss. Wien, vol. 1, 1850, p. 380.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 437.—Chapman, The Foraminifera, 1902, p. 183.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 3.

Description.—Test made up of a few ovate chambers in a coil, each chamber making up 120° of the volution so that but three chambers are visible from the exterior; wall thin, translucent, finely punctate; aperture a narrow slit at the base of the chamber.

The genus is closely related to *Chilostomella* and bears somewhat the same relation to it that *Triloculina* does to *Biloculina.*

The geological range of the genus is apparently somewhat greater than that of *Chilostomella,* going back to the Upper Cretaceous.

ALLOMORPHINA TRIGONA Reuss.

Plate 1, figs. 11–13.

Allomorphina trigona Reuss, Denkschr. Akad. Wiss. Wien, vol. 1, 1850, p. 380, pl. 48, figs. 14 *a–e.*—Schwager, Boll. Com. Geol. Italia, vol. 8, 1877, p. 26, pl. 71.—H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 67, pl. 8, figs. 13, 14; Rep. Voy. *Challenger,* Zoology, vol. 9, 1884, p. 438, pl. 55, figs. 24–26.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 305, pl. 9, figs. 3, 4.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 25, 1894, p. 53, pl. 9, figs. 517–519.—Goddard, Rec. Austr. Mus., vol. 6, 1905–7, p. 307.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 3, pl. 1, figs. 6–8; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 284.

Description.—Test composed of several ovate chambers, coiled, each chamber making 120° of the volution and embracing so that but three chambers are visible from the exterior; chambers longer than wide, inflated; sutures somewhat depressed; wall smooth, conspicuously punctate, usually thin and translucent; aperture a narrow curved opening at the base of the ventral margin of the chamber between it and the previously formed adjacent chamber.

Length about 0.40–0.60 mm.

Distribution.—About the only Atlantic record for this species seems to be that of Goës, who records it from off Spitzbergen. Other records for the species as a living form are from the Indo-Pacific.

Genus SEABROOKIA H. B. Brady, 1890.

Seabrookia H. B. Brady (type, *S. pellucida* H. B. Brady), Journ. Roy. Micr. Soc., 1890, p. 570.—Chapman, The Foraminifera, 1902, p. 182.

Description.—Test composed of a series of chambers, each partially or entirely inclosing the preceding one; wall thin, hyaline, perforate; aperture terminal, rounded, with a slightly thickened lip.

The records for this genus are all from recent seas, but are widely scattered in the various oceans.

SEABROOKIA EARLANDI (Wright).

Plate 1, figs. 14–16.

Millettia earlandi Wright, Ann. Mag. Nat. Hist., ser. 6, vol. 4, 1889, p. 448.
Seabrookia earlandi Wright, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 477, pl. 20, figs. 6, 7.—Heron-Allen and Earland, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 72, pl. 5, figs. 10–12.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 129.

Description.—"Test thin and hyaline; segments nearly embracing, protruding a little near the oral end, ovate, somewhat irregular in shape, slightly carinate, unequally convex on the upper and under sides; aperture a fissure extending the entire width of the narrow end of the segment; chambers usually five in number."

Length 0.30 mm.

Distribution.—Wright described this species from two stations off the southwest coast of Ireland, 37½ fathoms (69 meters), off Castletown, County Cork, Ireland, and 345 fathoms (631 meters), latitude 51° 2′ north, longitude 11° 27′ west. Herron-Allen and Earland record "a single quite typical specimen from Station 12" of the Clare Island region. They also make the following note: "It is much more abundant in some of the deeper *Goldseeker* dredgings in the North Sea and the Norwegian fjords, and is undoubtedly a deep-water form." The only other record seems to be that of Sidebottom from the Australian region. The other species *S. pellucida* H. B. Brady, is known only from the Indo-Pacific.

No specimens of the genus have been noted in the *Albatross* dredgings from the western Atlantic.

Family 7. GLOBIGERINIDAE.

Test composed of numerous chambers, usually much inflated, arranged typically in a trochoid coil, but in some species becoming planospiral; often umbilicate; wall calcareous and perforate, usually with a more or less regular reticulation and in perfect specimens in some species with long slender spines; aperture either large and simple or with numerous accessory openings.

This family is represented by comparatively few genera and species, yet in individuals they are probably the most abundant and widely distributed of all the Foraminifera. They make up a very high percentage of the *Globigerina*-ooze which covers a large proportion of the bottom of the ocean basins down to 2,000 or 2,500 fathoms (2,658 to 4,572 meters). Fossil species in the Cretaceous and Tertiary often make up a large percentage of certain limestones, showing the abundance of members of this family through various periods of later geological time.

Many of the species are pelagic at least at some stage in their life history and occur in enormous numbers in the ocean currents such as the Gulf Stream. A few species occur in cold waters, but the greatest development seems to be in the Tropics or subtropical waters, except where these are widely distributed by ocean currents.

The tendency in the family, as in all pelagic foraminifera, is to develop a form in which the protoplasm of the test may have free access to the surface. This is accomplished in part by a large umbilical aperture or in other species by numerous accessory apertures leading to various parts of the surface. The protoplasm in the pelagic forms, as has been shown by numerous authors, is very vesicular and is far greater in bulk than the test. In some of the species long spines are developed which radiate from the surface and apparently help in supporting the protoplasm. These are easily broken and are therefore usually wanting in bottom specimens. In the interior chambers of various species they may be often seen.

Another adaptation to pelagic life is the taking on of a generally spherical character. This is best seen in *Orbulina universa*, but a nearly spherical shape occurs in *Globigerina conglobata*, which is roughly spherical. All the species have inflated chambers.

While the species are widely distributed, especially the pelagic ones, there are others which seem to be evidently bottom-living forms and do not have the broad distribution of the former. In the western Atlantic there seem to be certain forms which differ with latitude or bottom temperature, and although these are not here separated, it is not impossible that it may later be possible to do so.

Genus GLOBIGERINA D'Orbigny, 1826.

Globigerina D'Orbigny (type, *G. bulloides* D'Orbigny), Ann. Sci. Nat., vol. 7, 1826, p. 277.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 589.—Chapman, The Foraminifera, 1902, p. 205.—Cushman, Bull. 71. U. S. Nat. Mus., pt. 4, 1914, p. 5.

Description.—Test composed of numerous inflated chambers arranged typically in a trochoid manner, but which in later development may be variously arranged; wall typically coarsely perforate, reticulate; aperture large, arched, at the base of the inner margin of the chamber, in some species opening on the umbilicus, in others with numerous accessory openings.

This genus has a number of very well characterized species, largely those described by Brady in the *Challenger* report and a few others. They make up the larger constituent of the typical *Globigerina*-ooze and form also a large element in *Pteropod*-ooze. There are evidently a considerable number of bottom-living species which should be more closely studied, for from the present studies it seems that

there may be varieties or species which have a definite distribution in the western Atlantic. The species of *Globigerina* can hardly be confused with any others, as the form of the test, coupled with the peculiar reticulate surface, should at once distinguish them.

GLOBIGERINA BULLOIDES D'Orbigny.

Plate 2, figs. 1–4.

From a study of the western Atlantic *Albatross* material the problem of what to refer to *G. bulloides* D'Orbigny has become a trying one. So many forms have been assigned to this species from all parts of the present oceans and from so many fossil formations that a reference to the various figures show a very wide range. There are very few specimens in all the *Albatross* stations examined that can at all be assigned to this species as defined by D'Orbigny in his Modele. Variety *triloba* Reuss is also very nearly wanting. There are many young specimens of other species that seem to be referable to *G. bulloides*, but it is easy to determine in a very large series of specimens that these are really young of other species and not adults. I have given in the accompanying table a list of the slides which have been assigned to *G. bulloides*, but these are often marked with a question. I have come to the conclusion that *G. bulloides* if present is a very rare species in the western Atlantic.

Globigerina bulloides—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19865	U.S.N.M.	1	D2042...	39 33 00 N.; 68 26 45 W..	1,555	38.5	glob. oz.....	Rare.
19866	U.S.N.M.	6	D2048...	40 02 00 N.; 68 50 30 W..	547	29.0	crs. s.....	Common.
19867	U.S.N.M.	4	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Few.
19868	U.S.N.M.	6	D2063...	42 23 00 N.; 66 23 00 W..	141	46.0	s., crs. g.....	Common.
19869	U.S.N.M.	5	D2073...	41 54 15 N.; 65 39 00 W..	587	49.0	gy. s.....	Few.
19870	U.S.N.M.	10+	D2226...	37 00 00 N.; 71 54 00 W..	2,045	36.8	glob. oz.....	Abundant.
19871	U.S.N.M.	7	D2228...	37 25 00 N.; 73 06 00 W..	1,582	36.8	br. m.....	Common.
19872	U.S.N.M.	4	D2242...	40 15 30 N.; 70 27 00 W..	58	51.4	gn. m.....	Few.
19873	U.S.N.M.	6	D2313...	32 53 00 N.; 77 53 00 W..	99	57.2	crs. s.....	Common.
20235	U.S.N.M.	3	D2614...	34 09 00 N.; 76 02 00 W..	168	.....	gy. s.....	Few.
20236	U.S.N.M.	5	D2705...	42 47 00 N.; 61 04 00 W..	1,255	.....	lt. br. oz....	Few.
20237	U.S.N.M.	10+	D2706...	41 28 30 N.; 65 35 30 W..	1,188	.....	gy. s.....	Abundant.
20238	U.S.N.M.	2	D2750...	40 06 00 N.; 68 01 00 W..	984	.....	gn. m.....	Rare.
20239	U.S.N.M.	2	D2748...	39 31 00 N.; 71 14 30 W..	1,163	.....	gy. m.....	Rare.

Globigerina bulloides, var. triloba—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19874	U.S.N.M.	1	D2063..	42 23 00 N.; 66 23 00 W..	141	46.0	s., crs. g.....	Rare.

GLOBIGERINA DUBIA Egger.

Plate 2, figs. 5–8.

Globigerina dubia Egger, Neues Jahrb. für Min., 1857, p. 281, pl. 9, figs. 7–9.—H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 71; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 595, pl. 79, figs. 17 *a–c*.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 366, p. 13, figs. 36–38, 77.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, pl. 37.—Goës, Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 66.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 322, pl. 69, fig. 4.—Rhumbler, in Brandt, Nordisches Plankton, Heft. 14, 1900, p. 19, fig. 20.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 404.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 154.—Chapman, Journ. Linn. Soc. Zool., vol. 30, 1910, p. 417.—Bagg, Bull. 513, U. S. Geol. Survey, 1912, p. 79, pl. 22, figs. 4 *a–d*.—Chapman, Zool. Res. "Endeavour," pt. 3, 1912, p. 311.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 6, pl. 4, figs. 1—3.—Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1914, p. 1025.—Chapman, Biol. Res. "Endeavour," vol. 3, pt. 1, 1915, p. 26.—Heron-Allen and Earland, Trans. Zool. Soc. London, vol. 20, 1915, p. 678; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 267.—Mestayer, Trans. New Zealand Inst., vol. 48, 1916, p. 129.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 149.—Cushman, Bull. 103, U. S. Nat. Mus., 1918, p. 65; Proc. U. S. Nat. Mus., vol. 56, 1919, p. 621.

Description.—Test composed of numerous inflated chambers arranged in a nautiloid spiral; chambers all visible from above, umbilicate below, with only the chambers of the last volution visible, usually 5 to 6 in number; wall reticulate; apertures of the chambers opening into the umbilical cavity.

Diameter, 0.50–0.80 mm.

Distribution.—From the records *G. dubia* is a very widely distributed species. That more than one species may be passing under this name is a very evident conclusion from the study of published figures. I have placed under it here three or four forms which may later prove to be distinct. In the Gulf of Mexico there are specimens with a rather high test and a deep umbilical region very different from the ordinary form of the species. Such forms may later be found to be distinct. In other parts of the area also there seem to be varietal forms which need further study before a final disposition of them can be made. This must be left to future dredgings.

Especially in such species as this where the original specimens were fossil ones a study of the type material is necessary to make clear just what the author had in mind and whether this should apply to so great a mass of recent material from many regions.

GLOBIGERINA SUBCRETACEA Chapman.

Under this name Chapman has placed the recent species which has been referred by many authors as *Globigerina cretacea*. It is probable that the recent species is not the same as the Cretaceous one. In the *Albatross* material I have not attempted to distinguish this from *G. dubia* Egger.

Globigerina dubia—material examined.

Cat. No.	Coll. of—	No. of speci-mens.	Station.	Locality.	Depth in fath-oms.	Bot-tom tem-pera-ture.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19534	U.S.N.M.	10+	D2003...	37 16 30 N.; 74 20 36 W..	641	.....	.....	Abundant.
19535	U.S.N.M.	3	D2034...	39 27 10 N.; 69 56 20 W..	1,346	38.0	glob. oz.....	Few.
19536	U.S.N.M.	3	D2035...	39 26 16 N.; 70 02 37 W..	1,362	.....	glob. oz.....	Few.
19537	U.S.N.M.	7	D2039...	38 19 26 N.; 68 20 20 W..	2,369	.....	glob. oz.....	Common.
19538	U.S.N.M.	8	D2041...	39 22 50 N.; 68 25 00 W..	1,608	38.0	glob. oz.....	Common.
19621	U.S.N.M.	10+	D2042...	39 33 00 N.; 68 26 45 W..	1,555	38.5	glob. oz.....	Abundant.
19622	U.S.N.M.	9	D2043...	39 49 00 N.; 68 26 30 W..	1,467	38.5	glob. oz.....	Common.
19623	U.S.N.M.	9	D2046...	40 02 49 N.; 68 49 00 W..	407	40.0	bu. m.....	Common.
19624	U.S.N.M.	4	D2048...	40 02 00 N.; 68 50 30 W..	547	29.0	crs. s.....	Few.
19625	U.S.N.M.	5	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Few.
19626	U.S.N.M.	10+	D2052...	39 40 05 N.; 69 21 25 W..	1,098	45.0	glob. oz.....	Abundant.
19627	U.S.N.M.	1	D2076...	41 13 00 N.; 66 00 50 W..	906	.....	bu. m.....	Rare.
19539	U.S.N.M.	3	D2084...	40 16 50 N.; 67 05 15 W..	1,290	40.0	bu. m., s.....	Few.
19540	U.S.N.M.	2	D2096...	39 22 20 N.; 70 52 20 W..	1,451	37.5	glob. oz.....	Rare.
19541	U.S.N.M.	8	D2097...	37 56 20 N.; 70 57 30 W..	1,917	.....	glob. oz.....	Common.
19542	U.S.N.M.	10+	D2099...	37 12 20 N.; 69 39 00 W..	2,949	.....	glob. oz.....	Abundant.
19543	U.S.N.M.	10+	D2105...	37 50 00 N.; 73 03 50 W..	1,395	41.0	glob. oz.....	Abundant.
19544	U.S.N.M.	10+	D2106...	37 41 20 N.; 73 03 20 W..	1,497	42.5	glob. oz.....	Abundant.
19545	U.S.N.M.	10+	D2109...	35 14 20 N.; 74 59 10 W..	142	50.5	bu. m.....	Abundant.
19546	U.S.N.M.	10+	D2111...	35 09 50 N.; 74 57 40 W..	938	.....	gn. m.....	Abundant.
19547	U.S.N.M.	1	D2114...	35 20 00 N.; 75 20 00 W..	14	72.5	m., blk. s....	Rare.
19548	U.S.N.M.	2	D2115...	35 49 30 N.; 74 34 45 W..	843	39.0	m., fne. s	Rare.
19549	U.S.N.M.	8	D2116...	35 45 23 N.; 74 31 25 W..	888	39.0	bu. m.....	Common.
19550	U.S.N.M.	10+	D2117...	15 24 20 N.; 63 31 30 W..	683	39.8	yl. m.....	Abundant.
19551	U.S.N.M.	9	D2138...	17 44 05 N.; 75 39 00 W..	23	.....	co., brk. sh..	Common.
19552	U.S.N.M.	5	D2140...	17 36 10 N.; 76 46 05 W..	966	39.7	s.....	Few.
19553	U.S.N.M.	1	D2144...	9 49 00 N.; 79 31 30 W..	896	.....	gn. m.....	Rare.
19554	U.S.N.M.	10+	D2150...	13 34 45 N.; 81 21 10 W..	382	45.8	wh. crs. s....	Abundant.
19555	U.S.N.M.	3	D2172...	38 01 15 N.; 73 44 00 W..	568	39.0	gn. m.....	Few.
19556	U.S.N.M.	2	D2173...	37 57 00 N.; 72 34 00 W..	1,600	37.0	glob. oz.....	Rare.
19557	U.S.N.M.	5	D2174...	38 15 00 N.; 72 03 00 W..	1,594	.....	gy. m.....	Few.
19558	U.S.N.M.	10+	D2196...	39 35 00 N.; 69 44 00 W..	1,230	38.0	gn. m.....	Abundant.
19559	U.S.N.M.	5	D2204...	39 30 30 N.; 71 44 30 W..	728	39.1	br. m.....	Few.
19560	U.S.N.M.	10+	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Abundant.
19661	U.S.N.M.	10+	D2208...	39 33 00 N.; 71 16 15 W..	1,178	38.4	gn. m.....	Abundant.
19562	U.S.N.M.	10+	D2212...	39 59 30 N.; 70 30 45 W..	428	40.0	gn. m.....	Abundant.
19563	U.S.N.M.	10+	D2217...	39 47 20 N.; 69 34 15 W..	924	38.1	gy. m.....	Abundant.
19564	U.S.N.M.	6	D2221...	39 05 30 N.; 70 44 30 W..	1,525	36.9	gy. oz.....	Common.
19565	U.S.N.M.	9	D2223...	37 48 30 N.; 69 43 30 W..	2,516	36.4	glob. oz.....	Common.
19566	U.S.N.M.	10+	D2224...	36 16 30 N.; 68 21 00 W..	2,574	36.8	glob. oz.....	Abundant.
19567	U.S.N.M.	10+	D2225...	36 05 30 N.; 69 51 45 W..	2,512	36.7	yl. oz.....	Abundant.
19568	U.S.N.M.	10+	D2226...	37 00 00 N.; 71 54 00 W..	2,045	36.8	glob. oz.....	Abundant.
19569	U.S.N.M.	10+	D2228...	37 25 00 N.; 73 06 00 W..	1,582	36.8	br. m.....	Abundant.
19570	U.S.N.M.	10+	D2230...	38 27 00 N.; 73 02 00 W..	1,168	36.8	gy. oz.....	Abundant.
19571	U.S.N.M.	10+	D2231...	38 29 00 N.; 73 09 00 W..	965	36.8	gy. oz.....	Abundant.
19572	U.S.N.M.	5	D2234...	39 09 00 N.; 72 03 15 W..	810	38.6	gn. m.....	Few.
19573	U.S.N.M.	10+	D2242...	40 15 30 N.; 70 27 00 W..	58	51.4	gn. m.....	Abundant.
19574	U.S.N.M.	10+	D2262...	39 54 45 N.; 69 29 45 W..	250	41.6	gn. m.....	Abundant.
19575	U.S.N.M.	10+	D2265...	37 07 40 N.; 74 35 40 W..	70	57.9	gn. m.....	Abundant.
19576	U.S.N.M.	8	D2311...	32 55 00 N.; 77 54 00 W..	79	59.1	crs. s.....	Common.
19577	U.S.N.M.	10+	D2312...	32 54 00 N.; 77 53 30 W..	88	57.8	crs. s.....	Abundant.
19578	U.S.N.M.	10+	D2313...	32 53 00 N.; 77 53 00 W..	99	57.2	crs. s.....	Abundant.
19579	U.S.N.M.	5	D2314...	32 43 00 N.; 77 51 00 W..	159	47.4	crs. s.....	Few.
19580	U.S.N.M.	10+	D2318...	24 25 45 N.; 81 46 00 W..	45	75.0	co.....	Abundant.
19581	U.S.N.M.	10+	D2335...	23 10 39 N.; 82 20 21 W..	204	.....	.....	Abundant.
19582	U.S.N.M.	5	D2339...	23 10 40 N.; 82 20 15 W..	191	.....	co.....	Few.
19583	U.S.N.M.	10+	D2352...	22 35 00 N.; 84 23 00 W..	463	45.0	wh. co.....	Abundant.
19584	U.S.N.M.	10+	D2355...	20 56 48 N.; 86 27 00 W..	399	.....	yl. oz.....	Abundant.
19585	U.S.N.M.	9	D2358...	20 19 00 N.; 87 03 30 W..	222	.....	fne. wh. co...	Common.
19586	U.S.N.M.	1	D2369...	29 16 30 N.; 85 32 00 W..	26	.....	crs. gy. s....	Rare.
19587	U.S.N.M.	3	D2370...	29 18 15 N.; 85 32 00 W..	25	.....	crs. gy. s....	Few.
19588	U.S.N.M.	10+	D2377...	29 07 30 N.; 88 08 00 W..	210	67.0	gy. m.....	Abundant.
19589	U.S.N.M.	10+	D2378...	29 14 30 N.; 88 09 30 W..	68	.....	gy. m.....	Abundant.
19590	U.S.N.M.	10+	D2379...	28 00 15 N.; 87 42 00 W..	1,467	.....	yl. oz.....	Abundant.
19591	U.S.N.M.	10+	D2381...	28 05 00 N.; 87 56 15 W..	1,350	.....	lt. br. m.....	Abundant.
19592	U.S.N.M.	10+	D2382...	28 19 45 N.; 88 01 30 W..	1,255	39.6	gy. m.....	Abundant.
19593	U.S.N.M.	10+	D2383...	28 32 00 N.; 88 06 00 W..	1,181	39.6	br. gn. m....	Abundant.
19594	U.S.N.M.	10+	D2385...	28 51 00 N.; 88 18 00 W..	730	40.1	gy. m.....	Abundant.
19595	U.S.N.M.	10+	D2388...	29 24 30 N.; 88 01 00 W..	35	.....	yl. s.....	Abundant.
19596	U.S.N.M.	10+	D2392...	28 47 30 N.; 87 27 00 W..	724	40.7	br. gy. m....	Abundant.
19597	U.S.N.M.	10+	D2393...	28 43 00 N.; 87 14 30 W..	525	41.1	lt. gy. m....	Abundant.
19598	U.S.N.M.	10+	D2394...	28 38 30 N.; 87 02 00 W..	420	41.8	gn. m.....	Abundant.
19599	U.S.N.M.	10+	D2395...	28 36 15 N.; 86 50 00 W..	347	44.1	gy. m.....	Abundant.
19600	U.S.N.M.	10+	D2396...	28 34 00 N.; 86 48 00 W..	335	.....	gy. m.....	Abundant.
19601	U.S.N.M.	3	D2397...	28 42 00 N.; 86 36 00 W..	280	46.1	gn. m.....	Few.
19602	U.S.N.M.	10+	D2398...	28 45 00 N.; 86 26 00 W..	227	48.6	gy. m.....	Abundant.
19603	U.S.N.M.	10+	D2399...	28 44 00 N.; 86 18 00 W..	196	51.6	gy. m.....	Abundant.
19604	U.S.N.M.	10+	D2400...	28 41 00 N.; 86 07 00 W..	169	.....	gy. m.....	Abundant.

Globigerina dubia—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance
				° ′ ″ ° ′ ″		° F.		
19605	U.S.N.M.	9	D2405...	28 45 00 N.; 85 02 00 W..	30	.....	gy. s.....	Common.
19606	U.S.N.M.	7	D2528...	41 47 00 N.; 65 37 30 W..	677	38.7	br. s.....	Common.
19607	U.S.N.M.	10+	D2530...	40 53 30 N.; 66 24 00 W..	956	38.4	gy. oz.....	Abundant.
19608	U.S.N.M.	6	D2531...	40 42 00 N.; 66 33 00 W..	852	38.4	gy. m.....	Common.
19609	U.S.N.M.	10+	D2534...	40 01 00 N.; 67 29 15 W..	1,234	37.8	gy. oz.....	Abundant.
19610	U.S.N.M.	10+	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Abundant.
19611	U.S.N.M.	10+	D2547...	39 54 30 N.; 70 20 00 W..	390	39.6	gn. m.....	Abundant.
19612	U.S.N.M.	10+	D2550...	39 44 30 N.; 70 30 45 W..	1,081	38.5	br. m.....	Abundant.
19613	U.S.N.M.	8	D2552...	39 47 07 N.; 70 35 00 W..	721	39.6	gy. oz.....	Common.
19614	U.S.N.M.	10+	D2562...	39 15 30 N.; 71 25 00 W..	1,434	37.3	gy. oz.....	Abundant.
19615	U.S.N.M.	10+	D2563...	39 18 30 N.; 71 23 30 W..	1,422	37.4	gy. oz.....	Abundant.
19616	U.S.N.M.	10+	D2564...	39 22 00 N.; 71 23 30 W..	1,390	37.3	gy. oz.....	Abundant.
19617	U.S.N.M.	7	D2566...	37 23 00 N.; 68 08 00 W..	2,620	36.4	gy. oz.....	Common.
19618	U.S.N.M.	10+	D2568...	39 15 00 N.; 68 08 00 W..	1,781	36.9	gy. oz.....	Abundant.
19619	U.S.N.M.	7	D2570...	39 54 00 N.; 67 05 30 W..	1,813	36.8	glob. oz.....	Common.
19620	U.S.N.M.	10+	D2572...	40 29 00 N.; 66 04 00 W..	1,769	37.9	gy. oz.....	Abundant.
20038	U.S.N.M.	10	D2573...	40 34 18 N.; 66 09 00 W..	1,742	37.3	gy. m., s....	Abundant.
20039	U.S.N.M.	6	D2581...	39 43 00 N.; 71 34 00 W..	394	.....	gn. m.....	Common.
20040	U.S.N.M.	1	D2584...	39 05 30 N.; 72 23 20 W .	541	39.5	gy. m.....	Rare.
20041	U.S.N.M.	10+	D2585...	39 08 30 N.; 72 18 00 W..	542	39.0	dk. gy. m...	Abundant.
20042	U.S.N.M.	9	D2586...	39 02 40 N.; 72 40 00 W..	328	40.2	dk. gy. m...	Common.
20043	U.S.N.M.	10+	D2614...	34 09 00 N.; 76 02 00 W..	168	.....	gy. s.....	Abundant.
20044	U.S.N.M.	10+	D2629...	23 48 40 N.; 75 10 40 W..	1,169	38.4	co. s.....	Abundant.
20045	U.S.N.M.	10+	D2639...	25 01 50 N.; 80 15 10 W..	56	.....	co. s.....	Abundant.
20046	U.S.N.M.	10+	D2641...	25 11 30 N.; 80 10 00 W..	60	69.2	co. s.....	Abundant.
20047	U.S.N.M.	9	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Common.
20048	U.S.N.M.	10+	D2644...	25 40 00 N.; 80 00 00 W..	193	43.4	gy. s.....	Abundant.
20049	U.S.N.M.	10+	D2648...	25 53 00 N.; 80 03 30 W..	84	.....	gn. m.....	Abundant.
20050	U.S.N.M.	10+	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Abundant.
20051	U.S.N.M.	10+	D2668...	30 58 30 N.; 79 38 30 W..	294	46.3	gy. s.....	Abundant.
20052	U.S.N.M.	10+	D2677...	32 39 00 N.; 76 50 30 W..	478	39.3	gn. m.....	Abundant.
20053	U.S.N.M.	10+	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Abundant.
20054	U.S.N.M.	10+	D2679...	32 40 00 N.; 76 40 30 W..	782	38.6	lt. gy. oz....	Abundant.
20055	U.S.N.M.	1	D2680...	39 50 00 N.; 70 26 00 W..	555	.....	.....	Rare.
20056	U.S.N.M.	10+	D2684...	39 35 00 N.; 70 54 00 W..	1,106	.....	br. c.....	Abundant.
20057	U.S.N.M.	2	D2689...	39 42 00 N.; 71 15 30 W..	525	.....	gn. m.....	Rare.
20058	U.S.N.M.	5	D2705...	42 47 00 N.; 60 04 00 W..	1,255	.....	lt. br. oz....	Few.
20059	U.S.N.M.	6	D2706...	41 28 30 N.; 65 35 30 W..	1,188	.....	gy. oz.....	Common.
20060	U.S.N.M.	10+	D2710...	40 06 00 N.; 68 01 00 W..	984	.....	gn. m.....	Abundant.
20061	U.S.N.M.	3	D2713...	38 20 00 N.; 70 08 30 W..	1,859	.....	br. oz.....	Rare.
20062	U.S.N.M.	10+	D2714...	38 22 00 N.; 70 17 30 W..	1,825	.....	br. oz.....	Abundant.
20063	U.S.N.M.	10+	D2716...	38 29 30 N.; 70 57 00 W..	1,631	.....	br. oz.....	Abundant.
20064	U.S.N.M.	2	D2739...	37 34 30 N.; 73 58 00 W..	811	38.2	gy. m.....	Rare.
20065	U.S.N.M.	9	D2748...	39 31 00 N.; 71 14 30 W..	1,163	37.8	gy. m.....	Common.
20066	U.S.N.M.	10+	D2751...	16 54 00 N.; 63 12 00 W..	687	40.0	bu. glob. oz.	Abundant.
20067	U.S.N.M.	10+	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Abundant.
20068	U.S.N.M.	3	D2756...	3 22 00 S.; 37 49 00 W..	417	40.5	gy. spk.....	Few.
20069	U.S.N.M.	2	D2761...	15 39 00 S.; 38 32 54 W..	818	39.0	pter. oz.....	Rare.
20070	U.S.N.M.	10+	D2763...	24 17 00 S.; 42 48 30 W..	671	37.9	br. glob. oz..	Abundant.
20071	U.S.N.M.	5	H47.....	17 46 30 N.; 65 10 25 W..	1,482	.....	crs. co.....	Few.
20072	U.S.N.M.	10+	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz.....	Abundant.
20073	U.S.N.M.	8	H49.....	17 37 30 N.; 65 15 00 W..	928	.....	oz. for.....	Common.
20074	U.S.N.M.	1	H56.....	17 44 15 N.; 65 27 50 W..	1,243	.....	co. oz. for...	Rare.
20075	U.S.N.M.	10+	H57.....	17 49 06 N.; 65 29 00 W..	2,188	.....	oz. for.....	Abundant.
20076	U.S.N.M.	10+	H58.....	17 45 20 N.; 65 35 35 W..	1,345	.....	oz. for.....	Abundant.
20077	U.S.N.M.	9	H60.....	17 39 00 N.; 65 44 00 W..	578	.....	co. s. for....	Common.
20078	U.S.N.M.	6	H62.....	17 32 40 N.; 65 52 20 W..	2,017	.....	co. s. for....	Common.
20079	U.S.N.M.	10+	H80.....	13 56 35 N.; 63 02 00 W..	684	.....	gy. m. for...	Abundant.
20080	U.S.N.M.	10+	H121....	16 36 20 N.; 66 41 00 W..	2,501	.....	choc. glob. oz.	Abundant.
20081	U.S.N.M.	10+	H133....	11 33 20 N.; 66 19 00 W..	533	.....	gy. m.....	Abundant.
20082	U.S.N.M.	9	H189....	17 42 30 N.; 74 40 00 W..	803	.....	br. m. for...	Common.

GLOBIGERINA DIGITATA H. B. Brady.

Plate 2, figs. 9–11.

Globigerina digitata H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 72; Rep. Voy. *Challenger* Zoology, vol. 9, 1884, p. 599, pl. 80, figs. 6–10; pl. 82, figs. 6, 7.—Terrigi, Mem. Accad. Nuovi Lincei, ser. 4, vol. 6, 1889, p. 113, pl. 6, fig. 13.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 369, pl. 13, figs. 25, 60, 61.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 37.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 323, pl. 70, fig. 2.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 404.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 153.—Chapman, Journ. Linn. Soc. Zool., vol. 30, 1910, p. 417.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 7, pl. 14, figs. 1–3.—Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1913, p. 1025.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 150.—Cushman, Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 288.

Description.—Test regularly spiral, trochoid, consisting of two or three volutions; early chambers inflated, subspherical, later chambers much elongated, the tip usually rounded; wall reticulate; aperture opening into the central umbilical opening; or in the elongate, adult chambers making up the larger part of the base of the chamber, the area of attachment being very much reduced.

Diameter of single Atlantic specimen slightly less than 1 mm.

Distribution.—This seems to be typically a species of the Pacific and Indian Oceans. Brady in the *Challenger* report recorded it from three stations in the South Atlantic. Flint recorded a single specimen from the Gulf of Mexico, *Albatross* station D2377, and I have another specimen from this same material. It is therefore very rare in the North Atlantic.

Globigerina digitata—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19901	U.S.N.M.	1	D2399...	28 44 00 N.; 86 18 00 W..	196	51.6	gy. m.....	Rare.

GLOBIGERINA DUTERTREI D'Orbigny.

Globigerina dutertrei D'Orbigny, in De la Sagra, Hist. Fis. Pol. Nat. Cuba, 1839, "Foraminifères," p. 95, pl. 4, figs. 19–21.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 601, pl. 81, figs. 1 *a–c*.—Cushman, Proc. U. S. Nat. Mus., vol. 59, 1921, p. 55, pl. 12, fig. 7; Publ. 311, Carnegie Inst. Washington, 1922, p. 36, pl. 5, figs. 8, 9.

Description.—Test rotaliform, generally rounded, very convex on the ventral side, the last coil usually consisting of five chambers; chambers gradually increasing in size, the later ones much inflated;

sutures depressed; aperture single, on the inner margin of the last-formed chamber in the umbilical area.

Diameter up to 0.60 mm.

Distribution.—D'Orbigny originally described this species from the West Indian region. It has since been recorded from very widely scattered areas in the present ocean basins. In the present paper it has probably been included under *G. dubia*. Until D'Orbigny's type specimens can be studied it may be impossible to determine just what this West Indian species may be.

GLOBIGERINA INFLATA D'Orbigny.

Plate 3, figs. 1–3.

Globigerina inflata D'Orbigny, in Barker, Webb, and Berthelot, Hist. Nat. Îles Canaries, vol. 2, pt. 2, 1839, Foraminifères, p. 134, pl. 2, figs. 7–9.—H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 72.—Balkwill and Wright, Proc. Roy. Irish Acad., ser. 2, vol. 3, 1882, p. 549.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 601, pl. 79, figs. 8–10.—Balkwill and Millett, Journ. Micr., vol. 3, 1884, p. 84, pl. 4, fig. 11.—Balkwill and Wright, Trans. Roy. Irish Acad., vol. 28, 1885, p. 347.—H. B. Brady, Journ. Roy. Micr. Soc., 1887, p. 916.—Wright, Ann. Mag. Nat. Hist., vol. 4, ser. 6, 1889, p. 449.—Pearcey, Trans. Glasgow Nat. Hist. Soc., vol. 2, 1890, p. 178.—Wright, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 488.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 369, pl. 13, figs. 45–47.—Göes, Kongl. Svensk. Vet. Akad. Handl., vol. 25, 1894, p. 85, pl. 14, figs. 763–765.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 322, pl. 69, fig. 3.—Fornasini, Mem. Accad. Sci. Ist. Bologna, ser. 5, vol. 7, 1899, p. 577, pl. 1, fig. 3.—Rhumbler, in Brandt, Nordisches Plankton, Heft 14, 1900, p. 19, fig. 19.—Wright, Irish Nat., vol. 9, no. 3, 1900, p. 55.—Millett, Journ. Roy. Micr. Soc., 1903, p. 687.—Chapman, Trans. New Zealand Inst., vol. 38, 1905, p. 100.—Balkwill and Millett, Recent Foram. Galway, 1908, p. 6, pl. 4, fig. 11.—Chapman, Subantarctic Ids. New Zealand, 1909, p. 350; Journ. Linn. Soc. Zool., vol. 30, 1910, p. 417.—Sidebottom, Mem. Proc. Manchester Lit. Philos. Soc., vol. 54, No. 16, 1910, p. 23.—Heron-Allen and Earland, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 105.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 8, pl. 4, figs. 4–8. Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1914, p. 1025.—Chapman, Biol. Res. "Endeavour," vol. 3, pt. 1, 1915, p. 27.—Heron-Allen and Earland, Trans. Zool. Soc. London, ser. 2, vol. 11, 1915, p. 679; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 267; Journ. Roy. Micr. Soc., 1916, p. 49.—Mestayer, Trans. New Zealand Inst., vol. 48, 1916, p. 129.—Chapman, British Antarctic Exped., Geology, vol. 2, 1916 (1917), p. 69, pl. 5, fig. 35.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 150.—Cushman, Bull. 103, U. S. Nat. Mus., 1918, p. 65; Publ. 291, Carnegie Inst. Washington, 1919, p. 39; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 289.

Description.—Test composed of numerous inflated chambers arranged in a trochoid spiral test of about three volutions, the last-formed one usually composed of four chambers, the dorsal side of the test flattened or slightly convex, the ventral side strongly convex;

test in side view about as high as broad, very finely reticulate, sometimes almost smooth, being the smoothest of the common species of the genus; aperture a long arched opening, running from the umbilicus nearly to the dorsal edge of the chamber, somewhat broadest toward the ventral side.

Diameter usually 0.50–0.80 mm., sometimes slightly more.

Distribution.—A tabulation of the *Albatross* records and the plotting of them on the Atlantic map has shown a very distinctive distribution for this species in the western Atlantic. Unlike most of the other species of the genus, it occurs very sparingly in the Tropics. There are three records for the Caribbean, two in the Gulf of Mexico, three off Florida, one off the coast of Georgia, and, except for one off Brazil, the remainder of the records, nearly a hundred in number, are off the northeastern coast of the United States.

This species therefore is one which is apparently for the most part a bottom-living species or else its distribution would probably be similar to that of *G. conglobata*, *G. aequilateralis*, and *G. sacculifera*.

Globigerina inflata—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19628	U.S.N.M.	10+	D2003...	37 16 30 N.; 74 20 36 W..	641	.....	.....	Abundant.
19629	U.S.N.M.	10+	D2018...	37 12 22 N.; 74 20 04 W..	788	39.0	bu. m.....	Abundant.
19630	U.S.N.M.	10+	D2022...	37 32 00 N.; 74 13 20 W..	487	40.0	bu. m.....	Abundant.
19631	U.S.N.M.	10+	D2029...	39 42 00 N.; 70 47 00 W..	1,168	38.5	gy. m.....	Abundant.
19632	U.S.N.M.	10+	D2034...	39 27 10 N.; 69 56 20 W..	1,346	38.0	glob. oz.....	Abundant.
19633	U.S.N.M.	10+	D2035...	39 26 16 N.; 70 02 37 W..	1,362	.....	glob. oz.....	Abundant.
19634	U.S.N.M.	10+	D2039...	38 19 26 N.; 68 20 20 W..	2,369	.....	glob. oz.....	Abundant.
19635	U.S.N.M.	9	D2042...	39 33 00 N.; 68 26 45 W..	1,555	38.5	glob. oz.....	Common.
19636	U.S.N.M.	9	D2043...	39 49 00 N.; 68 28 30 W..	1,467	38.5	glob. oz.....	Common.
19637	U.S.N.M.	8	D2046...	40 02 49 N.; 68 49 00 W..	407	40.0	bu. m.....	Common.
19638	U.S.N.M.	9	D2048...	40 02 00 N.; 68 50 30 W..	547	29.0	crs. s.....	Common.
19639	U.S.N.M.	9	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Common.
19640	U.S.N.M.	10+	D2052...	39 40 05 N.; 69 21 25 W..	1,098	45.0	glob. oz.....	Common.
19641	U.S.N.M.	4	D2063...	42 23 00 N.; 66 23 00 W..	141	46.0	s., crs. g.....	Few.
19642	U.S.N.M.	6	D2073...	41 54 15 N.; 65 39 00 W..	587	40.0	gy. s.....	Common.
19643	U.S.N.M.	6	D2076...	41 13 00 N.; 66 00 50 W..	906	.....	bu. m.....	Common.
19644	U.S.N.M.	2	D2078...	41 11 30 N.; 66 12 20 W..	499	40.0	gy. m.....	Rare.
19645	U.S.N.M.	10+	D2084...	40 16 50 N.; 67 05 15 W..	1,290	40.0	bu. m., s.....	Abundant.
19646	U.S.N.M.	10+	D2093...	39 42 50 N.; 71 01 20 W..	1,000	39.0	for., s.....	Abundant.
19647	U.S.N.M.	10+	D2096...	39 22 20 N.; 70 52 20 W..	1,451	37.5	glob. oz.....	Abundant.
19648	U.S.N.M.	10+	D2097...	37 56 20 N.; 70 57 30 W..	1,917	.....	glob. oz.....	Abundant.
19649	U.S.N.M.	2	D2099...	37 12 20 N.; 69 39 00 W..	2,949	.....	glob. oz.....	Rare.
19650	U.S.N.M.	10+	D2105...	37 50 00 N.; 73 03 50 W..	1,395	41.0	glob. oz.....	Abundant.
19651	U.S.N.M.	10+	D2106...	37 41 20 N.; 73 03 20 W..	1,497	42.5	glob. oz.....	Abundant.
19652	U.S.N.M.	10+	D2109...	35 14 20 N.; 74 59 10 W..	142	50.5	bu. m.....	Abundant.
19653	U.S.N.M.	5	D2110...	35 12 10 N.; 74 57 15 W..	516	40.0	bu. m.....	Few.
19654	U.S.N.M.	2	D2111...	35 09 50 N.; 74 57 40 W..	938	.....	gn. m.....	Rare.
19655	U.S.N.M.	1	D2117...	15 24 20 N.; 63 31 30 W..	683	39.8	yl. m.....	Rare.
19656	U.S.N.M.	10+	D2138...	17 44 05 N.; 75 39 00 W..	23	.....	co.....	Abundant.
19657	U.S.N.M.	10+	D2160...	13 34 45 N.; 81 21 10 W..	382	45.8	wh. crs. s...	Abundant.
19658	U.S.N.M.	10+	D2172...	38 01 15 N.; 73 44 00 W..	568	39.0	gn. m.....	Abundant.
19659	U.S.N.M.	10+	D2173...	37 57 00 N.; 72 34 00 W..	1,600	37.0	glob. oz.....	Abundant.
19660	U.S.N.M.	7	D2174...	38 15 00 N.; 72 03 00 W..	1,594	.....	gy. m.....	Common.
19661	U.S.N.M.	10+	D2189...	39 49 30 N.; 70 26 00 W..	600	39.7	gn. m., s.....	Abundant.
19662	U.S.N.M.	9	D2192...	39 46 30 N.; 70 14 45 W..	1,060	38.6	gy. oz.....	Common.
19663	U.S.N.M.	10+	D2194...	39 43 45 N.; 70 07 00 W..	1,140	38.4	oz.....	Abundant.
19664	U.S.N.M.	1	D2196...	39 35 00 N.; 69 44 00 W..	1,230	38.0	gn. m.....	Rare.
19665	U.S.N.M.	10+	D2202...	39 38 00 N.; 71 39 45 W..	515	39.1	gn. m.....	Abundant.
19666	U.S.N.M.	10+	D2204...	39 30 30 N.; 71 44 30 W..	728	39.1	br. m.....	Abundant.
19667	U.S.N.M.	10+	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Abundant.
19668	U.S.N.M.	10+	D2208...	39 33 00 N.; 71 16 15 W..	1,178	38.4	gn. m.....	Abundant.
19669	U.S.N.M.	10+	D2212...	39 59 30 N.; 70 30 45 W..	428	40.0	gn. m.....	Abundant.

Globigerina inflata—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
19670	U.S.N.M.	10+	D2217...	39 47 20 N.; 69 34 15 W..	924	38.1	gy. m.....	Abundant.
19671	U.S.N.M.	6	D2221...	39 05 30 N.; 70 44 30 W..	1,525	36.9	gy. oz.....	Common.
19672	U.S.N.M.	4	D2223...	37 48 30 N.; 69 43 30 W..	2,516	36.4	glob. oz.....	Few.
19673	U.S.N.M.	3	D2224...	36 16 30 N.; 68 21 00 W..	2,574	36.8	glob. oz.....	Few.
19674	U.S.N.M.	7	D2225...	36 05 30 N.; 69 51 45 W..	2,512	36.7	yl. oz.....	Common.
19675	U.S.N.M.	10+	D2226...	37 00 00 N.; 71 54 00 W..	2,045	36.8	glob. oz.....	Abundant.
19676	U.S.N.M.	10+	D2228...	37 25 00 N.; 73 06 00 W..	1,582	36.8	br. m.....	Abundant.
19677	U.S.N.M	10+	D2230...	38 27 00 N.; 73 02 00 W..	1,168	36.8	gy. oz.....	Abundant.
19678	U.S.N.M.	10+	D2231...	38 29 00 N.; 73 09 00 W..	965	36.8	gy. oz.....	Abundant.
19679	U.S.N.M.	10+	D2234...	39 09 00 N.; 72 03 15 W..	810	38.6	gn. m.....	Abundant.
19680	U.S.N.M.	7	D2242...	40 15 30 N.; 70 27 00 W..	58	51.4	gn. m.....	Common.
19681	U.S.N.M.	10+	D2262...	39 54 45 N.; 69 29 45 W..	250	41.6	gn. m., s....	Abundant.
19682	U.S.N.M.	7	D2265...	37 07 40 N.; 74 35 40 W..	70	57.9	gn. m., g....	Common.
19683	U.S.N.M.	2	D2309...	35 43 30 N.; 74 52 00 W..	56	.....	gy. s.....	Rare.
19684	U.S.N.M.	1	D2313...	32 53 00 N.; 77 53 00 W..	99	57.2	cr. s. s.....	Rare.
19685	U.S.N.M.	8	D2335...	23 10 39 N.; 82 20 21 W..	204	.....	.....	Common.
19686	U.S.N.M.	10+	D2528...	41 47 00 N.; 65 37 30 W..	677	38.7	br. s.....	Abundant.
19687	U.S.N.M.	10+	D2530...	40 53 30 N.; 66 24 00 W..	956	38.4	gy. oz.....	Abundant.
19688	U.S.N.M.	10+	D2531...	40 42 00 N.; 66 33 00 W..	852	38.4	gy. m.....	Abundant.
19689	U.S.N.M.	10+	D2534...	40 01 00 N.; 67 29 15 W..	1,234	37.8	gy. oz.....	Abundant.
19690	U.S.N.M.	10+	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Abundant.
19691	U.S.N.M.	10+	D2547...	39 54 30 N.; 70 20 00 W..	390	39.6	gn. m.....	Abundant.
19692	U.S.N.M.	10+	D2550...	39 44 30 N.; 70 30 45 W..	1,081	38.5	br. m.....	Abundant.
19693	U.S.N.M.	4	D2552...	39 47 07 N.; 70 35 00 W..	721	39.6	gy. oz.....	Few.
19694	U.S.N.M.	10+	D2562...	39 15 30 N.; 71 25 00 W..	1,434	37.3	gy. oz.....	Abundant.
19695	U.S.N.M.	10+	D2563...	39 18 30 N.; 71 23 30 W..	1,422	37.4	gy. oz.....	Abundant.
19696	U.S.N.M.	10+	D2564...	39 22 00 N.; 71 23 30 W..	1,390	37.3	gy. oz.....	Abundant.
19697	U.S.N.M.	10+	D2566...	37 23 00 N.; 68 08 00 W..	2,620	36.4	gy. oz.....	Abundant.
19698	U.S.N.M.	4	D2568...	39 15 00 N.; 68 08 00 W..	1,781	36.9	gy. oz.....	Few.
19699	U.S.N.M.	10+	D2570...	39 54 00 N.; 67 05 30 W..	1,813	36.8	glob. oz.....	Abundant.
19700	U.S.N.M.	10+	D2572...	40 29 00 N.; 66 04 00 W..	1,769	37.8	gy. oz.....	Abundant.
20016	U.S.N.M.	10	D2573...	40 34 18 N.; 66 09 00 W..	1,742	37.3	gy. m., s....	Abundant.
20017	U.S.N.M.	10	D2581...	39 43 00 N.; 71 34 00 W..	394	.....	gn. m.....	Abundant.
20018	U.S.N.M.	10	D2584...	39 05 30 N.; 72 23 20 W..	541	39.5	gy. m.....	Abundant.
20019	U.S.N.M.	10	D2585...	39 08 30 N.; 72 17 00 W..	542	39.0	dk. gy. m....	Abundant.
20020	U.S.N.M.	10	D2586...	39 02 40 N.; 72 40 00 W..	328	40.2	dk. gy. m....	Abundant.
20021	U.S.N.M.	2	D2614...	34 09 00 N.; 76 02 00 W..	168	.....	gy. s.....	Rare.
20022	U.S.N.M.	9	D2641...	25 11 30 N.; 80 10 00 W..	60	69.2	co. s.....	Common.
20023	U.S.N.M.	1	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Rare.
20024	U.S.N.M.	2	D2648...	25 53 00 N.; 80 03 30 W..	84	.....	gn. m.....	Rare.
20025	U.S.N.M.	2	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Rare.
20026	U.S.N.M.	10	D2680...	39 50 00 N.; 70 26 00 W..	555	.....	.....	Abundant.
20027	U.S.N.M.	10	D2684...	39 35 00 N.; 70 54 00 W..	1,106	.....	br. c.....	Abundant.
20028	U.S.N.M.	10	D2689...	39 42 00 N.; 71 15 30 W..	525	.....	gn. m.....	Abundant.
20029	U.S.N.M.	10	D2705...	42 47 00 N.; 61 04 00 W..	1,255	.....	lt. br. oz.....	Abundant.
20030	U.S.N.M.	10	D2706...	41 28 30 N.; 65 35 30 W..	1,188	.....	gy. oz. for....	Abundant.
20031	U.S.N.M.	10	D2710...	40 06 00 N.; 68 01 00 W..	984	.....	gn. m.....	Abundant.
20032	U.S.N.M.	3	D2713...	38 20 00 N.; 70 08 30 W..	1,859	.....	br. oz.....	Few.
20033	U.S.N.M.	10	D2714...	38 22 00 N.; 70 17 30 W..	1,825	.....	br. oz.....	Abundant.
20034	U.S.N.M.	10	D2716...	38 29 30 N.; 70 57 00 W..	1,631	.....	br. oz. for....	Abundant.
20035	U.S.N.M.	10	D2739...	37 34 30 N.; 73 58 00 W..	811	38.2	gy. m.....	Abundant.
20036	U.S.N.M.	10	D2748...	39 31 00 N.; 71 14 30 W..	1,163	37.8	gy. m. for....	Abundant.
20037	U.S.N.M.	3	D2763...	24 17 00 S.; 42 48 30 W..	671	37.9	br. glob. oz..	Few.

GLOBIGERINA PACHYDERMA (Ehrenberg).

Aristerospira pachyderma Ehrenberg, Abhandl. d. k. Akad. Wiss. Berlin. 1872 (1873), p. 386, pl. 1, fig. 4.

Globigerina pachyderma H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 600, pl. 114, figs. 19, 20.—Pearcey, Trans. Glasgow Nat. Hist. Soc., vol. 2, 1890, p. 178.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 361, pl. 13, figs. 12–14, 79.—Göes, Kongl. Svensk. Vet. Akad. Handl., vol. 25, No. 9, 1894, p. 85.—Heron-Allen and Earland, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 105.—Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1914, p. 1024.—Heron-Allen and Earland, Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 267.

Globigerina bulloides, "arctic variety," H. B. Brady, Ann. Mag. Nat. Hist., ser. 5, vol. 1, 1878, p. 435, pl. 21, figs. 10 *a-c*.

Globigerina bulloides D'Orbigny, var. *borealis* H. B. Brady, Proc. Roy. Soc. Edinb., vol. 11, 1882, p. 716.

Description.—Test coiled in a depressed spire, the general form subglobular, the last-formed volution consisting of four chambers, the sutures somewhat depressed; aperture an arched opening along the ventral margin of the inner face of the last-formed chamber.

Diameter up to 0.30 mm.

Distribution.—This species is an arctic one so far as published records show. According to Brady it is common within the Arctic Circle, but occurs only in bottom dredgings, not in the pelagic gatherings. Pearcey records it from the Faroe Channel, and Heron-Allen and Earland from a single station west of Scotland and in the Clare Island region. I have failed to find it even in the colder areas along the northeastern coast of the United States. Pearcey records it from the Antarctic. Egger records it from numerous stations in various parts of the world, and there are a few other scattered records, but it may be questioned as to whether it really occurs in its typical form except in the arctic or subarctic regions, with occasional occurrences in cold waters somewhat farther south.

GLOBIGERINA RUBRA D'Orbigny.

Plate 3, figs. 4–7.

Globigerina rubra D'Orbigny, in De la Sagra, Hist. Fis. Pol. Nat. Cuba. 1893, "Foraminifères," p. 94, pl. 4, figs. 12–14.—Bailey, Smiths, Contr., vol. 2, 1851, p. 11, pl., figs. 23, 24.—H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 72; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 602, pl. 79, figs. 11–16; Journ. Roy. Micr. Soc., 1887, p. 916.—H. B. Brady, Parker, and Jones, Trans. Zool. Soc. London, vol. 12, 1888, p. 225, pl. 45, fig. 12.—Wright, Ann. Mag. Nat. Hist., vol. 4, ser. 6, 1889, p. 449; Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 488.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 360, pl. 13, figs. 42–44.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 25, 1894, p. 85, pl. 14, fig. 766.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 37.—Goës, Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 67.—Silvestri, Mem. Pont. Accad. Nuovi Lincei, vol. 15, 1899, p. 262, pl. 5, fig. 4.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 322, pl. 69, fig. 5.—Fornasini, Mem. Accad. Sci. Ist. Bologna, ser. 5, vol. 7, 1899, p. 580, pl. 2, fig. 11.—Wright, Irish Nat., vol. 9, no. 3, 1900, p. 55.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 404.—Millett, Journ. Roy. Micr. Soc., 1903, p. 687.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 154.—Sidebottom, Mem. Proc. Manchester Lit. Philos. Soc., vol. 52, No. 13, 1908, p. 4; vol. 54, No. 16, 1910, p. 23.—Chapman, Journ. Linn. Soc. Zool., vol. 30, 1910, p. 416; Zool. Res. "Endeavour," pt. 3, 1912, p. 311.—Heron-Allen and Earland, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 105.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 9, pl. 3, figs. 6–9.—Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1914, p. 1040.—Chapman, Biol. Res. "Endeavour," vol. 3, pt. 1, 1915, p. 27.—Heron-Allen and Earland, Trans. Zool.

Soc. London, vol. 20, 1915, p. 679; Journ. Roy. Micr. Soc., 1916, p. 49; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 267.—SIDEBOTTOM, Journ. Roy. Micr. Soc., 1918, p. 149.—CUSHMAN, Publ. 291, Carnegie Inst. Washington, 1919, p. 39; Proc. U. S. Nat. Mus., vol. 56, 1919, p. 621; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 289; Proc. U. S. Nat. Mus., vol. 59, 1921, p. 55, pl. 12, fig. 6; Publ. 311, Carnegie Inst. Washington, 1922, p. 36, pl. 14, figs. 1, 2.

Description.—Test composed of several inflated chambers arranged in an elongate trochoid spire of about three volutions, each with three chambers; walls reticulate, with spines in pelagic specimens; aperture an arched opening at the umbilical border of the chamber, and in the later chambers this is supplemented by two or more nearly circular openings on the upper border of the chamber near its connection with the preceding chambers; color of the early chambers, sometimes all the chambers, pink.

Length about 0.75 mm.; diameter about 0.50 mm.

Distribution.—This was originally described by D'Orbigny from the West Indian region. In the Caribbean, the Gulf of Mexico, and in the path of the Gulf Stream this species is often very abundant. It has a very brightly colored test when well preserved and specimens are fairly fresh.

It becomes less well developed in more northern bottom samples, and although its range extends to the western coast of Europe, it was always taken in the tow nets in the Tortugas region, which is on the border of the Gulf Stream.

Outside the West Indian region the red color seems to be largely wanting and it may be that the species in its typical form is confined to the Atlantic.

Pelagic specimens have a distinctly spinose test.

Globigerina rubra—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
19446	U.S.N.M.	1	D2018...	37 12 22 N.; 74 20 04 W..	788	39.0	bu. m.....	Rare.
19447	U.S.N.M.	4	D2029...	39 42 00 N.; 70 47 00 W..	1,168	38.5	gy. m.....	Few.
19448	U.S.N.M.	9	D2034...	39 27 10 N.; 69 56 20 W..	1,346	38.0	glob. oz.....	Common.
19449	U.S.N.M.	5	D2035...	39 26 16 N.; 70 02 37 W..	1,362	.....	glob. oz.....	Few.
19450	U.S.N.M.	10+	D2039...	38 19 26 N.; 68 20 20 W..	2,369	.....	glob. oz.....	Abundant.
19451	U.S.N.M.	10+	D2041...	39 22 50 N.; 68 25 00 W..	1,608	38.0	glob. oz.....	Abundant.
19452	U.S.N.M.	10+	D2042...	39 33 00 N.; 68 26 45 W..	1,555	38.5	glob. oz.....	Abundant.
19453	U.S.N.M.	10+	D2043...	39 49 00 N.; 68 28 30 W..	1,467	38.5	glob. oz.....	Abundant.
19454	U.S.N.M.	3	D2046...	40 02 49 N.; 68 49 00 W..	407	40.0	bu. m.....	Few.
19455	U.S.N.M.	2	D2048...	40 02 00 N.; 68 50 30 W..	547	29.0	crs. s.....	Rare.
19456	U.S.N.M.	10+	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Abundant.
19457	U.S.N.M.	10+	D2052...	39 40 05 N.; 69 21 25 W..	1,098	45.0	glob. oz.....	Abundant.
19458	U.S.N.M.	10+	D2063...	42 23 00 N.; 66 23 00 W..	141	46.0	s., crs. g.....	Abundant.
19459	U.S.N.M.	10+	D2093...	39 42 50 N.; 71 01 20 W..	1,000	39.0	for., s.....	Abundant.
19460	U.S.N.M.	10+	D2097...	37 56 20 N.; 70 57 30 W..	1,917	.....	glob. oz.....	Abundant.
19461	U.S.N.M.	9	D2105...	37 50 00 N.; 73 03 50 W..	1,395	41.0	glob. oz.....	Common.
19462	U.S.N.M.	10+	D2106...	37 41 20 N.; 73 03 20 W..	1,497	42.5	glob. oz.....	Abundant.
19463	U.S.N.M.	10+	D2109...	35 14 20 N.; 74 59 10 W..	142	50.5	bu. m.....	Abundant.
19464	U.S.N.M.	10+	D2111...	35 09 50 N.; 74 57 40 W..	938	.....	gn.. m.....	Abundant.
19465	U.S.N.M.	7	D2112...	35 20 50 N.; 75 18 00 W..	16	73.5	s., blk. sp...	Common.
19466	U.S.N.M.	1	D2115...	35 49 30 N.; 74 34 45 W..	843	39.0	m., fne. s....	Rare.

Globigerina rubra—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
19467	U.S.N.M.	4	D2116...	35 45 23 N.; 74 31 25 W..	888	39.0	bu. m.....	Few.
19468	U.S.N.M.	10+	D2117...	15 24 20 N.; 63 31 30 W..	683	39.8	yl. m.....	Abundant.
19469	U.S.N.M.	10+	D2138...	17 44 05 N.; 75 39 00 W..	23	.....	co., brk. sh..	Abundant.
19470	U.S.N.M.	10+	D2140...	17 36 10 N.; 76 46 05 W..	966	39.7	s.....	Abundant.
19471	U.S.N.M.	10+	D2144...	9 49 00 N.; 79 31 30 W..	896	.....	gn. m.....	Abundant.
19472	U.S.N.M.	10+	D2150...	13 34 45 N.; 81 21 10 W..	382	45.8	wh. crs. s....	Abundant.
19473	U.S.N.M.	10+	D2160...	23 10 31 N.; 82 20 37 W..	167	.....	co.....	Abundant.
19474	U.S.N.M.	1	D2172...	38 01 15 N.; 73 44 00 W..	568	39.0	gn. m.....	Rare.
19475	U.S.N.M.	3	D2173...	37 57 00 N.; 72 34 00 W..	1,600	37.0	glob. oz.....	Few.
19476	U.S.N.M.	10+	D2174...	38 15 00 N.; 72 03 00 W..	1,594	.....	gy. m.....	Abundant.
19477	U.S.N.M.	10+	D2192...	39 46 30 N.; 70 14 45 W..	1,060	38.6	gy. oz.....	Abundant.
19478	U.S.N.M.	2	D2196...	39 35 00 N.; 69 44 00 W..	1,230	38.0	gn. m.....	Rare.
19479	U.S.N.M.	10+	D2202...	39 38 00 N.; 71 39 45 W..	515	39.1	gn. m.....	Abundant.
19480	U.S.N.M.	1	D2203...	39 34 15 N.; 71 41 15 W..	705	38.9	gn. m.....	Rare.
19481	U.S.N.M.	10+	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Abundant.
19482	U.S.N.M.	5	D2208...	39 33 00 N.; 71 16 15 W..	1,178	38.4	gn. m.....	Few.
19483	U.S.N.M.	10+	D2212...	39 59 30 N.; 70 30 45 W..	428	40.0	gn.m.....	Abundant.
19484	U.S.N.M.	10+	D2217...	39 47 20 N.; 69 34 15 W..	924	38.1	gy. m.....	Abundant.
19485	U.S.N.M.	3	D2223...	37 48 30 N.; 69 43 30 W..	2,516	36.4	glob. oz.....	Few.
19486	U.S.N.M.	10+	D2226...	37 00 00 N.; 71 54 00 W..	2,045	36.8	glob. oz.....	Abundant.
19487	U.S.N.M.	10+	D2228...	37 25 00 N.; 73 06 00 W..	1,582	36.8	br. m.....	Abundant.
19488	U.S.N.M.	2	D2231...	38 29 00 N.; 73 09 00 W..	965	36.8	gy. oz.....	Rare.
19489	U.S.N.M.	4	D2242...	40 15 30 N.; 70 27 00 W..	58	51.4	gn. m.....	Few.
19490	U.S.N.M.	7	D2262...	39 54 45 N.; 69 29 45 W..	250	41.6	gn. m., s....	Common.
19491	U.S.N.M.	10+	D2311...	32 55 00 N.; 77 54 00 W..	79	59.1	crs. s.....	Abundant.
19492	U.S.N.M.	10+	D2312...	32 54 00 N.; 77 53 30 W..	88	57.8	crs. s.....	Abundant.
19493	U.S.N.M.	10+	D2313...	32 53 00 N.; 77 53 00 W..	99	57.2	crs. s.....	Abundant.
19494	U.S.N.M.	10+	D2318...	24 25 45 N.; 81 46 00 W..	45	75.0	co.....	Abundant.
20197	U.S.N.M.	4	D2335...	23 10 39 N.; 82 20 21 W..	204	.....	.....	Few.
19495	U.S.N.M.	10+	D2352...	22 35 00 N.; 84 23 00 W..	463	45.0	wh. co.....	Abundant.
19496	U.S.N.M.	10+	D2355...	20 56 48 N.; 86 27 00 W..	399	.....	yl. oz.....	Abundant.
19497	U.S.N.M.	10+	D2358...	20 19 00 N.; 87 03 30 W..	222	.....	fne. wh. co..	Abundant.
19498	U.S.N.M.	5	D2369...	29 16 30 N.; 85 32 00 W..	26	.....	crs. gy. s....	Few.
19499	U.S.N.M.	2	D2370...	29 18 15 N.; 85 32 00 W..	25	.....	crs. gy. s....	Rare.
19500	U.S.N.M.	10+	D2377...	29 07 30 N.; 88 08 00 W..	210	67.0	gy. m.....	Abundant.
19501	U.S.N.M.	10+	D2378...	29 14 30 N.; 88 09 30 W..	68	.....	gy. m.....	Abundant.
19502	U.S.N.M.	10+	D2379...	28 00 15 N.; 87 42 00 W..	1,467	.....	yl. oz.....	Abundant.
19503	U.S.N.M.	10+	D2381...	28 05 00 N.; 87 56 15 W..	1,330	.....	lt. br. m....	Abundant.
19504	U.S.N.M.	10+	D2382...	28 19 45 N.; 88 01 30 W..	1,255	39.6	gy. m.....	Abundant.
19505	U.S.N.M.	10+	D2383...	28 32 00 N.; 88 05 00 W..	1,181	39.6	gy. m.....	Abundant.
19506	U.S.N.M.	7	D2385...	28 51 00 N.; 88 18 00 W..	730	40.1	gy. m.....	Common.
19507	U.S.N.M.	10+	D2388...	29 24 30 N.; 88 01 00 W..	35	.....	yl. s.....	Abundant.
19508	U.S.N.M.	10+	D2392...	28 47 30 N.; 87 27 00 W..	724	40.7	br. gy. m....	Abundant.
19509	U.S.N.M.	10+	D2393...	28 43 00 N.; 87 14 30 W..	525	41.1	lt. gy. m....	Abundant.
19510	U.S.N.M.	10+	D2394...	28 38 30 N.; 87 02 00 W..	420	41.8	gn. m.....	Abundant.
19511	U.S.N.M.	10+	D2395...	28 36 15 N.; 86 50 00 W..	347	44.1	gy. m.....	Abundant.
19512	U.S.N.M.	10+	D2396...	28 34 00 N.; 86 48 00 W..	335	.....	gy. m.....	Abundant.
19513	U.S.N.M.	1	D2397...	28 42 00 N.; 86 36 00 W..	280	46.1	gy. m.....	Rare.
19514	U.S.N.M.	10+	D2398...	28 45 00 N.; 86 26 00 W..	227	48.6	gy. m.....	Abundant.
19515	U.S.N.M.	10+	D2399...	28 44 00 N.; 86 18 00 W..	196	51.6	gy. m.....	Abundant.
19516	U.S.N.M.	10+	D2400...	28 41 00 N.; 86 07 00 W..	169	.....	gy. m.....	Abundant.
19517	U.S.N.M.	10+	D2405...	28 45 00 N.; 85 02 00 W..	30	.....	gy. s.....	Abundant.
19518	U.S.N.M.	1	D2409...	27 04 00 N.; 83 21 15 W..	26	.....	crs. gy. s....	Rare.
19519	U.S.N.M.	10+	D2415...	30 44 00 N.; 79 26 00 W..	440	45.6	crs. s.....	Abundant.
19520	U.S.N.M.	10+	D2416...	31 26 00 N.; 79 07 00 W..	276	53.8	co., brk. sh..	Abundant.
19521	U.S.N.M.	10+	D2420...	37 03 20 N.; 74 31 40 W..	104	47.7	bk. s.....	Abundant.
19522	U.S.N.M.	1	D2528...	41 47 00 N.; 65 37 30 W..	677	38.7	br. s.....	Rare.
19523	U.S.N.M.	5	D2530...	40 53 30 N.; 66 24 00 W..	956	38.4	gy. oz.....	Few.
19524	U.S.N.M.	1	D2531...	40 42 00 N.; 66 33 00 W..	852	38.4	gy. m.....	Rare.
19525	U.S.N.M.	8	D2534...	40 01 00 N.; 67 29 15 W..	1,234	37.8	gy. oz.....	Common.
19526	U.S.N.M.	2	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Rare.
19527	U.S.N.M.	4	D2547...	39 54 30 N.; 70 20 00 W..	390	39.6	gn. m.....	Rare.
19528	U.S.N.M.	10+	D2550...	39 44 30 N.; 70 30 45 W..	1,081	38.5	br. m.....	Abundant.
19529	U.S.N.M.	2	D2552...	39 47 07 N.; 70 35 00 W..	721	39.6	gy. oz.....	Rare.
19530	U.S.N.M.	4	D2562...	39 15 30 N.; 71 25 00 W..	1,434	37.3	gy. oz.....	Few.
19531	U.S.N.M.	8	D2563...	39 18 30 N.; 71 23 30 W..	1,422	37.4	gy. oz.....	Common.
19532	U.S.N.M.	6	D2568...	39 15 00 N.; 68 08 00 W..	1,781	36.9	gy. oz.....	Common.
19533	U.S.N.M.	2	D2570...	39 54 00 N.; 67 05 30 W..	1,813	36.8	glob. oz.....	Rare.
20198	U.S.N.M.	10+	D2614...	34 09 00 N.; 76 02 00 W..	168	.....	gy. s.....	Abundant.
20199	U.S.N.M.	10+	D2629...	23 48 40 N.; 75 10 40 W..	1,169	38.4	co. s.....	Abundant.
20200	U.S.N.M.	8	D2639...	25 04 50 N.; 80 15 10 W..	56	.....	co. s.....	Common.
20201	U.S.N.M.	10+	D2641...	25 11 30 N.; 80 10 00 W..	60	69.2	co. s.....	Abundant.
20202	U.S.N.M.	7	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Common.
20203	U.S.N.M.	10+	D2644...	25 40 00 N.; 80 00 00 W..	193	43.4	gy. s.....	Abundant.
20204	U.S.N.M.	6	D2648...	25 53 00 N.; 80 03 30 W..	84	.....	gn. m.....	Common.
20205	U.S.N.M.	10+	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Abundant.
20206	U.S.N.M.	10+	D2668...	30 58 30 N.; 79 38 30 W..	294	46.3	gy. s.....	Abundant.
20207	U.S.N.M.	10+	D2677...	32 39 00 N.; 76 50 30 W..	478	39.3	gn. m.....	Abundant

Globigerina rubra—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
20208	U.S.N.M.	9	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Common.
20209	U.S.N.M.	10+	D2679...	32 40 00 N.; 76 40 30 W..	782	38.6	lt. gy. oz....	Abundant.
20210	U.S.N.M.	6	D2684...	39 35 00 N.; 70 54 00 W..	1,106	.....	br. c.....	Common.
20211	U.S.N.M.	1	D2706...	41 28 30 N.; 65 35 30 W..	1,188	.....	gy. oz.....	Rare.
20212	U.S.N.M.	4	D2710...	40 06 00 N.; 68 01 00 W..	984	.....	gn. m.....	Few.
20213	U.S.N.M.	10+	D2713...	38 20 00 N.; 70 08 30 W..	1,859	.....	br. oz.....	Abundant.
20214	U.S.N.M.	10+	D2714...	38 22 00 N.; 70 17 30 W..	1,825	.....	br. oz.....	Abundant.
20215	U.S.N.M.	5	D2716...	38 29 30 N.; 70 57 00 W..	1,631	.....	br. oz. for...	Few.
20216	U.S.N.M.	2	D2748...	39 31 00 N.; 71 14 30 W..	1,163	37.8	gy. m. for...	Rare.
20217	U.S.N.M.	10+	D2751...	16 54 00 N.; 63 12 00 W..	687	40.0	bu. glob. oz.	Abundant.
20218	U.S.N.M.	10+	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Abundant.
20219	U.S.N.M.	10+	D2756...	3 22 00 S.; 37 49 00 W..	417	40.5	gy. sp.....	Abundant.
20220	U.S.N.M.	10+	D2758...	6 59 00 S.; 34 47 00 W..	20	79.0	brk. sh.....	Abundant.
20221	U.S.N.M.	10+	D2761...	15 39 00 S.; 38 32 54 W...	818	39.0	pter. oz.....	Abundant.
20222	U.S.N.M.	10+	D2763...	24 17 00 S.; 42 48 30 W..	671	37.9	br. glob. oz..	Abundant.
20223	U.S.N.M.	10+	H47.....	17 46 30 N.; 65 10 25 W..	1,482	.....	crs. co. s....	Abundant.
20224	U.S.N.M.	8	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz. for...	Common.
20225	U.S.N.M.	10+	H49.....	17 37 30 N.; 65 15 00 W..	928	.....	oz. for.....	Abundant.
20226	U.S.N.M.	10+	H56.....	17 44 15 N.; 65 27 50 W..	1,243	.....	co. oz. for...	Abundant.
20227	U.S.N.M.	10+	H57.....	17 49 06 N.; 65 20 00 W..	2,188	.....	oz. for.....	Abundant.
20228	U.S.N.M.	10+	H58.....	17 45 20 N.; 65 35 35 W..	1,345	.....	oz. for.....	Abundant.
20229	U.S.N.M.	10+	H60.....	17 39 00 N.; 65 44 00 W..	578	.....	co. s. for.....	Abundant.
20230	U.S.N.M.	10+	H62.....	17 32 40 N.; 65 52 20 W..	2,017	.....	co. s. for.....	Abundant.
20231	U.S.N.M.	10+	H80.....	13 56 35 N.; 63 02 00 W..	684	.....	gy. m. for...	Abundant.
20232	U.S.N.M.	10+	H121....	16 36 20 N.; 66 41 00 W..	2,501	.....	choc. glob. oz.	Abundant.
20233	U.S.N.M.	10+	H133....	11 33 20 N.; 66 19 00 W..	533	.....	gy. m. for...	Abundant.
20234	U.S.N.M.	10+	H189....	17 42 30 N.; 74 40 00 W..	803	.....	br. m. for...	Abundant.

GLOBIGERINA CONGLOBATA H. B. Brady.

Plate 3, figs. 8–13.

Globigerina conglobata H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 72; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 603, pl. 80, figs. 1–5; pl. 82, fig. 5.—H. B. Brady, Parker, and Jones, Trans. Zool. Soc. London, vol. 12, 1888, p. 225, pl. 45, fig. 13.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 368, pl. 13, figs. 55, 56.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 25, 1894, p. 86, pl. 14, figs. 768, 769.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 37.—Goës, Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 66.—Chapman, Quart. Journ. Geol. Soc., vol. 54, 1898, p. 555.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 322, pl. 69, fig. 6.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 404.—Fornasini, Mem. Accad. Sci. Ist. Bologna, ser. 5, vol. 7, 1899, p. 582, pl. 2, figs. 12–15; pl. 3, figs. 1–5.—Millett, Journ. Roy. Micr. Soc., 1903, p. 688.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 153.—Chapman, Journ. Linn. Soc. Zool., vol. 30, 1910, p. 416; Proc. Roy. Soc. N. S. Wales, vol. 48, 1914, p. 289.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 10, pl. 3, figs. 3–5; pl. 10, figs. 1, 6.—Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1914, p. 289.—Heron-Allen and Earland, Trans. Zool. Soc. London, vol. 20, 1915, p. 680.—Mestayer, Trans. New Zealand Inst., vol. 48, 1916, p. 129.—Cushman, Bull. 103, U. S. Nat. Mus., 1918, p. 66.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 150.—Cushman, Publ. 291, Carnegie Inst. Washington, 1919, p. 39; Proc. U. S. Nat. Mus., vol. 56, 1919, p. 622; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 290.

Description.—Test subglobular, the early chambers arranged in a compact spiral; in the adult the last three chambers become much

flattened and extended laterally so that they form nearly the whole surface of the test; wall strongly reticulate, the angles between the reticulations often being almost spinose; aperture at the inner margin of the chamber near the umbilicus and with several rounded secondary apertures along the contact between the last-formed chamber and the previous ones to which it is adjacent.

Diameter up to or exceeding 1 mm.

Distribution.—This is essentially a pelagic species and its distribution seems to be largely determined by ocean-current movements, especially of those currents which sweep away from tropical regions. The Gulf Stream distributes this species, which is most abundant and best developed in the Caribbean. Specimens found farther north are often somewhat smaller and few, if any, of them show the large fine tests developed in the Tropics.

This species has the test well modified for a pelagic existence. The generally spherical shape of the test with the large aperture and numerous accessory openings allow free egress of the protoplasmic contents which seems necessary to the floating of the somewhat heavy test.

The early development of the test is a trochoid spire which soon becomes modified to the subspherical form. It is one of the most easily recognized species of the genus.

Globigerina conglobata—material examined.

Cat. No.	Coll. of—	No. of speci-mens.	Station.	Locality.	Depth in fath-oms.	Bot-tom tem-pera-ture.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19172	U.S.N.M.	10+	D2003...	37 16 30 N.; 74 20 36 W..	641	.....	.....	Abundant.
19173	U.S.N.M.	10+	D2018...	37 12 22 N.; 74 20 04 W..	788	39.0	bu. m.....	Abundant.
19174	U.S.N.M.	5	D2034...	39 27 10 N.; 69 56 20 W..	1,346	38.0	glob. oz.....	Few.
19175	U.S.N.M.	8	D2035...	39 26 16 N.; 70 02 37 W..	1,362	.....	glob. oz.....	Common.
19176	U.S.N.M.	10+	D2039...	38 19 26 N.; 68 20 20 W..	2,369	.....	glob. oz.....	Abundant.
19177	U.S.N.M.	10+	D2041...	39 22 50 N.; 68 25 00 W..	1,608	38.0	glob. oz.....	Abundant.
19178	U.S.N.M.	10+	D2042...	39 33 00 N.; 68 26 45 W..	1,555	38.5	glob. oz.....	Abundant.
19179	U.S.N.M.	10+	D2043...	39 49 00 N.; 68 28 30 W..	1,467	38.5	glob. oz.....	Abundant.
19180	U.S.N.M.	10+	D2046...	40 02 49 N.; 68 49 00 W..	407	40.0	bu. m.....	Abundant.
19181	U.S.N.M.	10+	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Abundant.
19182	U.S.N.M.	10+	D2052...	39 40 05 N.; 69 21 25 W..	1,098	45.0	glob. oz.....	Abundant.
19183	U.S.N.M.	4	D2076...	41 13 00 N.; 66 00 50 W..	906	.....	bu. m.....	Few.
19184	U.S.N.M.	2	D2084...	40 16 50 N.; 67 05 15 W..	1,290	40.0	bu. m., s....	Rare.
19185	U.S.N.M.	5	D2093...	39 42 50 N.; 71 01 20 W..	1,000	39.0	for., s.....	Few.
19186	U.S.N.M.	1	D2096...	39 22 20 N.; 70 52 20 W..	1,451	37.5	glob. oz.....	Rare.
19187	U.S.N.M.	10+	D2097...	37 56 20 N.; 70 57 30 W..	1,917	.....	glob. oz.....	Abundant.
19188	U.S.N.M.	5	D2099...	37 12 20 N.; 69 39 00 W..	2,749	.....	glob. oz.....	Few.
19189	U.S.N.M.	10+	D2105...	37 50 00 N.; 73 03 50 W..	1,395	41.0	glob. oz.....	Abundant.
19190	U.S.N.M.	10+	D2106...	37 41 20 N.; 73 03 20 W..	1,497	42.5	glob. oz.....	Abundant.
19191	U.S.N.M.	10+	D2109...	35 14 20 N.; 74 59 10 W..	142	50.5	bu. m.....	Abundant.
19192	U.S.N.M.	1	D2110...	35 12 20 N.; 74 57 15 W..	516	40.0	bu. m.....	Rare.
19193	U.S.N.M.	10+	D2111...	35 09 50 N.; 74 57 40 W..	938	.....	gn. m.....	Abundant.
19194	U.S.N.M.	10+	D2117...	15 24 20 N.; 63 31 30 W..	683	39.8	yl. m., fne. s.	Abundant.
19195	U.S.N.M.	10+	D2138...	17 44 05 N.; 75 39 00 W..	23	.....	co., brk. sh..	Abundant.
19196	U.S.N.M.	10+	D2140...	17 36 10 N.; 76 46 05 W..	966	39.7	s.....	Abundant.
19197	U.S.N.M.	10+	D2144...	9 49 00 N.; 79 31 30 W..	896	.....	gn. m.....	Abundant.
19198	U.S.N.M.	10+	D2150...	13 34 45 N.; 81 21 10 W..	382	45.8	wh. crs. s....	Abundant.
19199	U.S.N.M.	10+	D2160...	23 10 31 N.; 82 20 37 W..	167	.....	co.....	Abundant.
19200	U.S.N.M.	1	D2172...	38 01 15 N.; 73 44 00 W..	568	39.0	gn. m.....	Rare.
19201	U.S.N.M.	1	D2173...	37 57 00 N.; 72 34 00 W..	1,600	37.0	glob. oz.....	Rare.
19202	U.S.N.M.	10+	D2174...	38 15 00 N.; 72 03 00 W..	1,594	.....	gy. m.....	Abundant.
19203	U.S.N.M.	10+	D2189...	39 49 30 N.; 70 26 00 W..	600	39.7	gn. m., s....	Abundant.
19204	U.S.N.M.	10+	D2192...	39 46 30 N.; 70 14 45 W..	1,060	38.6	gy. oz.....	Abundant.

Globigerina conglobata—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
19205	U.S.N.M.	1	D2196...	39 35 00 N.; 69 44 00 W..	1,230	38.0	gn. m.....	Rare.
19206	U.S.N.M.	10+	D2202...	39 38 00 N.; 71 39 45 W..	515	39.1	gn. m.....	Abundant.
19207	U.S.N.M.	10+	D2203...	39 34 15 N. 71 14 15 W..	705	38.9	gn. m., s....	Abundant.
19208	U.S.M.N.	10+	D2204...	39 30 30 N.; 71 44 30 W..	728	39.1	br. m.....	Abundant.
19209	U.S.N.M.	3	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Few.
19210	U.S.N.M.	10+	D2208...	39 33 00 N.; 71 16 15 W..	1,178	38.4	gn. m.....	Abundant.
19211	U.S.N.M.	10+	D2212 ..	39 59 30 N.; 70 30 45 W..	428	40.0	gn. m.....	Abundant.
19212	U.S.N.M.	10+	D2217...	39 47 20 N.; 69 34 15 W..	924	38.1	gy. m.....	Abundant.
19213	U.S.N.M.	1	D2221...	39 05 30 N.; 70 44 30 W..	1,525	36.9	gy. oz.....	Rare.
19214	U.S.N.M.	10+	D2224...	36 16 30 N.; 68 21 00 W..	2,574	36.8	glob. oz....	Abundant.
19215	U.S.N.M.	10+	D2225...	36 05 30 N.; 69 51 45 W..	2,512	36.7	yl. oz.....	Abundant.
19216	U.S.N.M.	10+	D2226...	37 00 00 N.; 71 54 00 W..	2,045	36.8	glob. oz....	Abundant.
19217	U.S.N.M.	10+	D2228...	37 25 00 N.; 73 06 00 W..	1,582	36.8	br. m.....	Abundant.
19218	U.S.N.M.	10+	D2230...	38 27 00 N.; 73 02 00 W..	1,168	36.8	gy. oz.....	Abundant.
19219	U.S.N.M.	10+	D2231...	38 29 00 N.; 73 09 00 W..	965	36.8	gy. oz.....	Abundant.
19220	U.S.N.M.	10+	D2234...	39 09 00 N.; 72 03 15 W..	810	38.6	gn. m.....	Abundant.
19221	U.S.N.M.	10+	D2262...	39 54 45 N.; 69 29 45 W..	250	41.6	gn. m., s....	Abundant.
19222	U.S.N.M.	4	D2312...	32 54 00 N.; 77 53 30 W..	88	57.8	crs. s.....	Few..
19223	U.S.N.M.	10+	D2313...	32 53 00 N.; 77 53 00 W..	99	57.2	crs. s., bk.sp.	Abundant.
19224	U.S.N.M.	10+	D2335...	23 10 39 N.; 82 20 21 W..	204	.....	.....	Abundant.
19225	U.S.N.M.	10+	D2352...	22 35 00 N.; 84 23 00 W..	463	45.0	wh. co.....	Abundant.
19226	U.S.N.M.	1	D2358...	20 19 00 N.; 87 03 30 W..	222	.....	fne. wh.co...	Rare.
19227	U.S.N.M.	10+	D2377...	29 07 30 N.; 88 08 00 W..	210	67.0	gy. m.....	Abundant.
19228	U.S.N.M.	4	D2378...	29 14 30 N.; 88 09 30 W..	68	.....	gy. m.....	Few.
19229	U.S.N.M.	10+	D2379...	28 00 15 N.; 87 42 00 W..	1,467	.....	yl. oz.....	Abundant.
19230	U.S.N.M.	10+	D2381...	28 05 00 N.; 87 56 15 W..	1,330	.....	lt. br. m....	Abundant.
19231	U.S.N.M.	9	D2382...	28 19 45 N.; 88 01 30 W..	1,255	39.6	gy. m.....	Common.
19232	U.S.N.M.	10+	D2383...	28 32 00 N.; 88 01 30 W..	1,181	39.6	br. gn. m....	Abundant.
19233	U.S.N.M.	10+	D2385...	28 51 00 N.; 88 18 00 W..	730	40.1	gy. m.....	Abundant.
19234	U.S.N.M.	2	D2388...	29 24 30 N.; 88 01 00 W..	35	.....	yl. s.....	Rare.
19235	U.S.N.M.	10+	D2392...	28 17 30 N.; 87 27 00 W..	724	40.7	br. gy. m....	Abundant.
19236	U.S.N.M.	10+	D2393...	28 43 00 N.; 87 14 30 W..	525	41.1	lt. gy. m....	Abundant.
19237	U.S.N.M.	10+	D2394...	28 38 30 N.; 87 02 00 W..	420	41.8	gn. m.....	Abundant.
19238	U.S.N.M.	10+	D2395...	28 36 15 N.; 86 50 00 W..	347	44.1	gy. m.....	Abundant.
19239	U.S.N.M.	10+	D2396...	28 34 00 N.; 86 48 00 W..	335	.....	gy. m.....	Abundant.
19240	U.S.N.M.	7	D2398...	28 45 00 N.; 86 26 00 W..	227	48.6	gy. m.....	Common.
19241	U.S.N.M.	10+	D2399...	28 44 00 N.; 86 18 00 W..	196	51.6	gy. m.....	Abundant.
19242	U.S.N.M.	10+	D2400...	28 41 00 N.; 86 07 00 W..	169	.....	gy. m.....	Abundant.
19243	U.S.N.M.	10+	D2415...	30 44 00 N.; 79 26 00 W..	440	45.6	crs. s.....	Abundant.
19244	U.S.N.M.	10+	D2416...	31 26 00 N.; 79 07 00 W..	276	53.8	co., brk. sh..	Abundant.
19245	U.S.N.M.	1	D2420...	37 03 20 N.; 74 31 40 W..	104	47.7	bk. s.....	Rare.
19246	U.S.N.M.	10+	D2530...	40 53 30 N.; 66 24 00 W..	956	38.4	gy. oz.....	Abundant.
19247	U.S.N.M.	3	D2531...	40 42 00 N.; 66 33 00 W..	852	38.4	gy. m.....	Few.
19248	U.S.N.M.	10+	D2534...	40 01 00 N.; 67 29 15 W..	1,234	37.8	gy. oz.....	Abundant.
19249	U.S.N.M.	10+	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Abundant.
19250	U.S.N.M.	10+	D2547...	39 54 30 N.; 70 20 00 W..	390	39.6	gn. m.....	Abundant.
19251	U.S.N.M.	10+	D2550...	39 44 30 N.; 70 30 45 W..	1,081	38.5	br. m.....	Abundant.
19252	U.S.N.M.	2	D2552...	39 47 07 N.; 70 35 00 W..	721	39.6	gy. oz.....	Rare.
19253	U.S.N.M.	10+	D2562...	39 15 30 N.; 71 25 00 W..	1,434	37.3	gy. oz.....	Abundant.
19254	U.S.N.M.	10+	D2563...	39 18 30 N.; 71 23 30 W..	142	37.4	gy. oz.....	Abundant.
19255	U.S.N.M.	10+	D2564...	39 22 00 N.; 71 23 30 W..	1,390	37.3	gy. oz.....	Abundant.
19256	U.S.N.M.	10+	D2568...	39 15 00 N.; 68 08 00 W..	1,781	36.9	gy. oz.....	Abundant.
19257	U.S.N.M.	10+	D2572...	40 29 00 N.; 66 04 00 W..	1,769	37.8	gy. oz.....	Abundant.
20083	U.S.N.M.	6	D2573...	40 34 18 N.; 66 09 00 W..	1,742	37.3	gy. m., s....	Common.
20084	U.S.N.M.	10	D2581...	39 43 00 N.; 71 34 00 W..	394	.....	gn. m.....	Abundant.
20085	U.S.N.M.	10	D2584...	39 05 30 N.; 72 23 20 W..	541	39.5	gy. m.....	Abundant.
20086	U.S.N.M.	10	D2585...	39 08 30 N.; 72 17 00 W..	542	39.0	dk. gy. m...	Abundant.
20087	U.S.N.M.	10	D2586...	39 02 40 N.; 72 40 00 W..	328	40.2	dk. gy. m...	Abundant.
20088	U.S.N.M.	10	D2629...	23 48 40 N.; 75 10 40 W..	1,169	38.4	co. s.....	Abundant.
20089	U.S.N.M.	1	D2639...	25 04 50 N.; 80 15 10 W..	56	.....	co. s.....	Rare.
20090	U.S.N.M.	4	D2641...	25 11 30 N.; 89 10 00 W..	60	69.2	co. s.....	Few.
20091	U.S.N.M.	2	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Rare.
20092	U.S.N.M.	3	D2644...	25 40 00 N.; 80 00 00 W..	193	43.4	gy. s.....	Few.
20093	U.S.N.M.	3	D2648...	25 53 00 N.; 80 03 30 W..	84	.....	gn. m.....	Few.
20094	U.S.N.M.	10	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Abundant.
20095	U.S.N.M.	9	D2668...	30 58 30 N.; 79 38 30 W..	294	46.3	gy. s.....	Common.
20096	U.S.N.M.	10	D2677...	32 39 00 N.; 76 50 30 W..	478	39.3	gn. m.....	Abundant.
20097	U.S.N.M.	6	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Common.
20098	U.S.N.M.	10+	D2679...	32 40 00 N.; 76 40 30 W..	782	38.6	lt. gy.oz.....	Abundant.
20099	U.S.N.M.	6	D2680...	33 50 00 N.; 70 26 00 W..	555	.....	.....	Common.
20100	U.S.N.M.	10+	D2684...	39 35 00 N.; 70 54 00 W..	1,106	.....	br. c.....	Abundant.
20101	U.S.N.M.	10+	D2710...	40 06 00 N.; 68 01 00 W..	984	.....	gn. m.....	Abundant.
20102	U.S.N.M.	10+	D2714...	38 22 00 N.; 70 17 30 W..	1,825	.....	br. oz.....	Abundant.
20103	U.S.N.M.	10+	D2716...	38 29 30 N.; 70 57 00 W..	1,631	.....	br. oz.....	Abundant.
20104	U.S.N.M.	4	D2739...	37 34 30 N.; 73 58 00 W..	811	38.2	gy. m.....	Few.
20105	U.S.N.M.	5	D2748...	39 31 00 N.; 71 14 30 W..	1,163	37.8	gy. m.....	Few.
20106	U.S.N.M.	10+	D2751...	16 54 00 N.; 63 12 00 W..	687	40.0	bu. glob. oz.	Abundant.
20107	U.S.N.M.	10+	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Abundant.

Globigerina conglobata—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
20108	U.S.N.M.	5	D2756...	3 22 00 S.; 37 49 00 W..	417	40.5	gv. sp.....	Few.
20109	U.S.N.M.	1	D2758...	6 59 00 S.; 34 47 00 W..	20	79.0	brk. sh.....	Rare.
20110	U.S.N.M.	10+	D2761...	15 39 00 S.; 38 32 54 W..	818	39.0	pter. oz.....	Abundant.
20111	U.S.N.M.	10+	D2763...	24 17 00 S.; 42 48 30 W..	671	37.9	br. glob. oz..	Abundant.
20112	U.S.N.M.	10+	H47.....	17 46 30 N.; 65 10 25 W..	1,482	.....	crs. co. s....	Abundant.
20113	U.S.N.M.	10+	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz. for...	Abundant.
20114	U.S.N.M.	10+	H49.....	17 37 30 N.; 65 15 00 W..	928	.....	oz. for.....	Abundant.
20115	U.S.N.M.	10+	H56.....	17 44 15 N.; 65 27 50 W..	1,243	.....	co. oz. for...	Abundant.
20116	U.S.N.M.	8	H57.....	17 49 06 N.; 65 29 00 W..	2,188	.....	oz. for.....	Common.
20117	U.S.N.M.	10+	H58.....	17 45 20 N.; 65 35 35 W..	1,345	.....	oz. for.....	Abundant.
20118	U.S.N.M.	9	H60.....	17 39 00 N.; 65 44 00 W..	578	.....	co. s.....	Common.
20119	U.S.N.M.	5	H62.....	17 32 40 N.; 65 52 20 W..	2,017	.....	co. s.....	Few.
20120	U.S.N.M.	9	H80.....	13 56 35 N.; 63 02 00 W..	684	.....	gv. m.....	Common.
20121	U.S.N.M.	10+	H121....	16 36 20 N.; 66 41 00 W..	2,501	.....	choc. glob. oz	Abundant.
20122	U.S.N.M.	3	H189....	17 42 30 N.; 74 40 00 W..	803	.....	br. m.....	Few.

GLOBIGERINA SACCULIFERA H. B. Brady.

Plate 4, figs. 1–6.

Globigerina helicina Carpenter (not *G. helicina* D'Orbigny), Introd. Foram., 1862, pl. 12, fig. 11.

Globigerina sacculifera H. B. Brady, Geol. Mag., dec. 2, vol. 4, 1877, p. 535; Quart. Journ. Micr. Sci., vol. 19, 1879, p. 73; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 604, pl. 80, figs. 11–17; pl. 82, fig. 4.—H. B. Brady, Parker, and Jones, Trans. Zool. Soc. London, vol. 12, 1888, p. 225.—Wright, Ann. Mag. Nat. Hist., vol. 6, ser. 5, 1890, p. 124; Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 488.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 369, pl. 13, figs. 50, 51.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 25, no. 9, 1894, p. 86.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 37.—Goës, Bull. Mus. Comp. Zool., vol. 29, 1896, p. 66.—Silvestri, Mem. Pont. Accad. Nuovi Lincei, vol. 15, 1899, p. 263, pl. 5, fig. 5.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 322, pl. 70, fig. 1.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 404.—Millett, Journ. Roy. Micr. Soc., 1903, p. 688.—Dakin, Rep. Ceylon Pearl Oyster Fish., vol. 5. 1906, p. 237.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 154.—Chapman, Journ. Linn. Soc. Zool., vol. 30, 1910, p. 417.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 11, pl. 2, figs. 4–6; pl. 5; pl. 10, fig. 4.—Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1914, pp. 1025, 1040.—Mestayer, Trans. New Zealand Inst., vol. 48, 1916, p. 129.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 149.—Cushman, Bull. 676, U. S. Geol. Survey, 1918, p. 57, pl. 13, fig. 2; Bull. 103, U. S. Nat. Mus., p. 66; Publ. 291, Carnegie Inst. Washington, 1919, p. 39; Proc. U. S. Nat. Mus., vol. 56, 1919, p. 39; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 291.

Description.—Test composed of numerous chambers, the early ones similar to *Globigerina bulloides*, but very soon developing accessory openings, especially on the dorsal side of the test where the new chamber meets the previous one; early chambers nearly spherical, the later ones becoming somwhat elongate and compressed, the final chamber in fully developed or senescent specimens often much

flattened and the outer end with numerous projecting points; wall strongly reticulate, except in the final chamber, which is often much smoother than the preceding ones; aperture large, on the ventral side near the umbillicus, with numerous other secondary openings about the inner border of the chamber.

Diameter up to and sometimes exceeding 1 mm.

Distribution.—This seems to be a truly pelagic species and its distribution therefore very dependent upon surface movements of the ocean waters. Like certain of the other pelagic species, the best development seems to be in the Caribbean. There in the bottom samples there are very fine large specimens.

The last-formed chamber is much modified in several ways. In the adult or senescent specimen this last formed chamber becomes very large, the periphery often with lobate projections which are often of bizarre shapes. The chamber itself on account of the very large aperture, often taking up most of the base, is somewhat loosely attached. The surface of this chamber also, instead of being coarsely reticulate as in the earlier chambers, is much more finely reticulate or even almost smooth.

This early stages of this species might be mistaken for *G. bulloides*, but the accessory openings on the dorsal side are developed or at least suggested at a very early age.

Globigerina sacculifera—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19258	U.S.N.M.	1	D2003...	37 16 30 N.; 74 20 36 W..	641	.....	.....	Rare.
19259	U.S.N.M.	1	D2034...	39 27 10 N.; 69 56 20 W..	1,346	38.0	glob. oz.....	Rare.
19260	U.S.N.M.	1	D2035...	39 26 16 N.; 70 02 37 W..	1,362	.....	glob. oz.....	Rare.
19261	U.S.N.M.	10+	D2039...	38 19 26 N.; 68 20 20 W..	2,369	.....	glob. oz.....	Abundant.
19262	U.S.N.M.	3	D2041...	39 22 50 N.; 68 25 00 W..	1,608	38.0	glob. oz.....	Few.
19263	U.n.N.M.	4	D2042...	39 33 00 N.; 68 26 45 W..	1,555	38.5	glob. oz.....	Few.
19264	U.S.N.M.	10+	D2043...	39 49 00 N.; 68 28 30 W..	1,467	38.5	glob. oz.....	Abundant.
19265	U.S.N.M.	4	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Few.
19266	U.S.N.M.	6	D2052...	39 40 05 N.; 69 21 25 W..	1,098	45.0	glob. oz.....	Common.
19267	U.S.N.M.	1	D2096...	39 22 20 N.; 70 52 50 W..	1,451	37.5	glob. oz.....	Rare.
19268	U.S.N.M.	10+	D2097...	37 56 20 N.; 70 57 30 W..	1,917	.....	glob. oz.....	Abundant.
19269	U.S.N.M.	3	D2099...	37 12 20 N.; 69 39 00 W..	2,949	.....	glob. oz.....	Few.
19270	U.S.N.M.	5	D2105...	37 50 00 N.; 73 03 50 W..	1,395	41.0	glob. oz.....	Few.
19271	U.S.N.M.	1	D2106...	37 41 20 N.; 73 03 20 W..	1,497	42.5	glob. oz.....	Rare.
19272	U.S.N.M.	10+	D2109...	35 14 20 N.; 74 59 10 W..	142	50.5	bu. m.....	Abundant.
19273	U.S.N.M.	10+	D2111...	35 09 50 N.; 74 57 40 W..	938	.....	gn. m.....	Abundant.
19274	U.S.N.M.	1	D2115...	35 49 30 N.; 74 34 45 W..	843	39.0	m., fne. s....	Rare.
19275	U.S.N.M.	9	D2116...	35 45 23 N.; 74 31 25 W..	888	39.0	bu. m., fne.s.	Common.
19276	U.S.N.M.	10+	D2117...	15 24 20 N.; 63 31 30 W..	683	39.8	yl. m., fne. s.	Abundant.
19277	U.S.N.M.	3	D2138...	17 44 05 N.; 75 39 00 W..	23	.....	co., brk. sh.	Few.
19278	U.S.N.M.	10+	D2140...	17 36 10 N.; 76 46 05 W..	966	39.7	s.....	Abundant.
19279	U.S.N.M.	10+	D2144...	9 49 00 N.; 79 31 30 W..	896	.....	gn. m.....	Abundant.
19280	U.S.N.M.	10+	D2150...	13 34 45 N.; 81 21 10 W..	382	45.8	wh. ers. s....	Abundant.
19281	U.S.N.M.	10+	D2160...	23 10 31 N.; 82 20 37 W..	167	.....	co.....	Abundant.
19282	U.S.N.M.	1	D2172...	38 01 15 N.; 73 44 00 W..	568	39.0	gn. m.....	Rare.
19283	U.S.N.M.	2	D2173...	37 57 00 N.; 72 34 00 W..	1,600	37.0	glob. oz.....	Rare.
19284	U.S.N.M.	3	D2174...	38 15 00 N.; 72 03 00 W..	1,594	.....	gy. m.....	Few.
19285	U.S.N.M.	1	D2189...	39 49 30 N.; 70 26 00 W..	600	39.7	gn. m., s.....	Rare.
19286	U.S.N.M.	1	D2196...	39 35 00 N.; 69 44 00 W..	1,230	38.0	gn. m.....	Rare.
19287	U.S.N.M.	7	D2202...	39 38 00 N.; 71 39 45 W..	515	39.1	gn. m.....	Common.
19288	U.S.N.M.	2	D2203...	39 34 15 N.; 71 41 15 W..	705	38.9	gn. m., s.....	Rare.
19289	U.S.N.M.	1	D2204...	39 30 30 N.; 71 44 30 W..	728	39.1	br. m.....	Rare.

Globigerina sacculifera—material examined—Continued.

Cat. No.	Coll. of—	No. of speci-mens.	Station.	Locality.	Depth in fath-oms.	Bot-tom tem-pera-ture.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
19290	U.S.N.M.	8	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Common.
19291	U.S.N.M.	10+	D2208...	39 33 00 N.; 71 16 15 W..	1,178	38.4	gn. m.....	Abundant.
19292	U.S.N.M.	6	D2212...	39 59 30 N.; 70 30 45 W..	428	40.0	gn. m.....	Common.
19293	U.S.N.M.	2	D2217...	39 47 20 N.; 69 34 15 W..	924	38.1	gy. m.....	Rare.
19294	U.S.N.M.	6	D2223...	37 48 30 N.; 70 44 30 W..	1,525	36.9	gy. oz.....	Common.
19295	U.S.N.M.	10+	D2224...	36 16 30 N.; 68 21 00 W..	2,574	36.8	glob. oz.....	Abundant.
19296	U.S.N.M.	10+	D2225...	36 05 30 N.; 69 51 45 W..	2,512	36.7	yl. oz.....	Abundant.
19297	U.S.N.M.	10+	D2226...	37 00 00 N.; 71 54 00 W..	2,045	36.8	glob. oz.....	Abundant.
19298	U.S.N.M.	10+	D2228...	37 25 00 N.; 73 06 00 W..	1,582	36.8	br. m.....	Abundant.
19299	U.S.N.M.	6	D2230...	38 27 00 N.; 73 02 00 W..	1,168	36.8	gy. oz.....	Common.
19300	U.S.N.M.	4	D2231...	38 29 00 N.; 73 09 00 W..	965	36.8	gy. oz.....	Few.
19301	U.S.N.M.	6	D2242...	40 15 30 N.; 70 27 00 W..	58	51.4	gn. m.....	Common.
19302	U.S.N.M.	10+	D2262...	39 54 45 N.; 69 29 45 W..	250	41.6	gn. m., s.....	Abundant.
19303	U.S.N.M.	2	D2309...	35 43 30 N.; 74 52 00 W..	56	.....	gy. s.....	Rare.
19304	U.S.N.M.	10+	D2311...	32 55 00 N.; 77 54 00 W..	79	59.1	crs. s.....	Abundant.
19305	U.S.N.M.	6	D2312...	32 54 00 N.; 77 53 30 W..	88	57.8	crs. s.....	Common.
19306	U.S.N.M.	10+	D2313...	32 53 00 N.; 77 53 00 W..	99	57.2	crs. s.....	Abundant.
19307	U.S.N.M.	2	D2314...	32 43 00 N.; 77 51 00 W..	159	47.4	crs. s.....	Rare.
19308	U.S.N.M.	2	D2318...	24 25 45 N.; 81 46 00 W..	45	75.0	co.....	Rare.
19309	U.S.N.M.	10+	D2335...	23 10 39 N.; 82 20 21 W..	204	.....	.....	Abundant.
19310	U.S.N.M.	5	D2339...	23 10 40 N.; 82 20 15 W..	191	.....	co.....	Few.
19311	U.S.N.M.	10+	D2352...	22 35 00 N.; 84 23 00 W..	463	45.0	wh. co.....	Abundant.
19312	U.S.N.M.	10+	D2355...	20 56 48 N.; 86 27 00 W..	399	.....	yl. oz.....	Abundant.
19313	U.S.N.M.	10+	D2358...	20 19 00 N.; 87 03 30 W..	222	.....	fne. wh. co..	Abundant.
19314	U.S.N.M.	10+	D2369...	29 16 30 N.; 85 32 00 W..	26	.....	ers. gy. s....	Abundant.
19315	U.S.N.M.	10+	D2370...	29 18 15 N.; 85 32 00 W..	25	.....	ers. gy. s....	Abundant.
19316	U.S.N.M.	10+	D2377...	29 07 30 N.; 88 08 00 W..	210	67.0	gy. m.....	Abundant.
19317	U.S.N.M.	4	D2378...	29 14 30 N.; 88 09 30 W..	68	.....	gy. m.....	Few.
19318	U.S.N.M.	10+	D2379...	28 00 15 N.; 87 42 00 W..	1,467	.....	yl. oz.....	Abundant.
19319	U.S.N.M.	10+	D2381...	28 05 00 N.; 87 56 15 W..	1,330	.....	lt. br. m.....	Abundant.
19320	U.S.N.M.	10+	D2382...	28 19 45 N.; 88 01 30 W..	1,255	39.6	gy. m.....	Abundant.
19321	U.S.N.M.	10+	D2383...	28 32 00 N.; 88 06 00 W..	1,181	39.6	br. gn. m....	Abundant.
19322	U.S.N.M.	10+	D2385...	28 51 00 N.; 88 18 00 W..	730	40.1	gy. m.....	Abundant.
19323	U.S.N.M.	10+	D2388...	29 24 30 N.; 88 01 00 W..	35	.....	yl. s.....	Abundant.
19324	U.S.N.M.	10+	D2392...	28 47 30 N.; 87 27 00 W..	724	40.7	br. gy. m....	Abundant.
19325	U.S.N.M.	10+	D2393...	28 43 00 N.; 87 14 30 W..	525	41.1	lt. gy. m....	Abundant.
19326	U.S.N.M.	10+	D2394...	28 38 30 N.; 87 02 00 W..	420	41.8	gn. m.....	Abundant.
19327	U.S.N.M.	10+	D2395...	28 36 15 N.; 86 50 00 W..	347	44.1	gy. m.....	Abundant.
19328	U.S.N.M.	10+	D2396...	28 34 00 N.; 86 48 00 W..	335	.....	gy. m.....	Abundant.
19329	U.S.N.M.	1	D2397...	28 42 00 N.; 86 36 00 W..	280	46.1	gy. m.....	Rare.
19330	U.S.N.M.	10+	D2398...	28 45 00 N.; 86 26 00 W..	227	48.6	gy. m.....	Abundant.
19331	U.S.N.M.	10+	D2399...	28 44 00 N.; 86 18 00 W..	196	51.6	gy. m.....	Abundant.
19332	U.S.N.M.	10+	D2400...	28 41 00 N.; 86 07 00 W..	169	.....	gy. m.....	Abundant.
19333	U.S.N.M.	10+	D2405...	28 45 00 N.; 85 02 00 W..	30	.....	gy. s.....	Abundant.
19334	U.S.N.M.	10+	D2415...	30 44 00 N.; 79 26 00 W..	440	45.6	crs. s.....	Abundant.
19335	U.S.N.M.	10+	D2416...	31 26 00 N.; 79 07 00 W..	276	53.8	co., brk. sh..	Abundant.
19336	U.S.N.M.	10+	D2420...	37 03 20 N.; 74 31 40 W..	104	47.7	blk. s.....	Abundant.
19337	U.S.N.M.	3	D2530...	40 53 30 N.; 66 24 00 W..	956	38.4	gy. oz.....	Few.
19338	U.S.N.M.	5	D2534...	40 01 00 N.; 67 29 15 W..	1,234	37.8	gy. oz.....	Few.
19339	U.S.N.M.	10+	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Abundant.
19340	U.S.N.M.	8	D2552...	39 47 07 N.; 70 35 00 W..	721	39.6	gy. oz.....	Common.
19341	U.S.N.M.	6	D2562...	39 15 30 N.; 71 25 00 W..	1,434	37.3	gy. oz.....	Common.
19342	U.S.N.M.	3	D2563...	39 18 30 N.; 71 23 30 W..	1,422	37.4	gy. oz.....	Few.
19343	U.S.N.M.	1	D2564...	39 22 00 N.; 71 23 30 W..	1,390	37.3	gy. oz.....	Rare.
19344	U.S.N.M.	10+	D2568...	39 15 00 N.; 68 08 00 W..	1,781	36.9	gy. oz.....	Abundant.
19345	U.S.N.M.	3	D2570...	39 54 00 N.; 67 05 30 W..	1,813	36.8	gloh. oz.....	Few.
19346	U.S.N.M.	10+	D2572...	40 29 00 N.; 66 04 00 W..	1,769	37.8	gy. oz.....	Abundant.
20123	U.S.N.M.	8	D2586...	39 02 40 N.; 72 40 00 W..	328	40.2	dk. gy. m....	Common.
20124	U.S.N.M.	10+	D2614...	34 09 00 N.; 76 02 00 W..	168	.....	gy. s.....	Abundant.
20125	U.S.N.M.	10+	D2629...	23 48 40 N.; 75 10 40 W..	1,169	38.4	co. s.....	Abundant.
20126	U.S.N.M.	7	D2639...	25 04 50 N.; 80 15 10 W..	56	.....	co. s.....	Common.
20127	U.S.N.M.	10+	D2641...	25 11 30 N.; 80 10 00 W..	60	69.2	co. s.....	Abundant.
20128	U.S.N.M.	10+	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Abundant.
20129	U.S.N.M.	10+	D2644...	25 40 00 N.; 80 00 00 W..	193	43.4	gy. s.....	Abundant.
20130	U.S.N.M.	5	D2648...	25 53 00 N.; 80 03 00 W..	84	.....	gn. m.....	Few.
20131	U.S.N.M.	7	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Common.
20132	U.S.N.M.	10+	D2668...	30 58 30 N.; 79 38 30 W..	294	46.3	gy. s.....	Abundant.
20133	U.S.N.M.	10+	D2677...	32 39 00 N.; 76 50 30 W..	478	39.3	gn. m.....	Abundant.
20134	U.S.N.M.	10+	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Abundant.
20135	U.S.N.M.	7	D2679...	32 40 00 N.; 76 40 30 W..	782	38.6	lt. gy. oz....	Common.
20136	U.S.N.M.	1	D2684...	39 35 00 N.; 70 54 00 W..	1,106	.....	br. c.....	Rare.
20137	U.S.N.M.	1	D2689...	39 42 00 N.; 71 15 30 W..	525	.....	gn. m.....	Rare.
20138	U.S.N.M.	2	D2710...	40 06 00 N.; 68 01 00 W..	984	.....	gn. m.....	Rare.
20139	U.S.N.M.	5	D2713...	38 20 00 N.; 70 08 30 W..	1,859	.....	br. oz.....	Few.
20140	U.S.N.M.	10+	D2714...	38 22 00 N.; 70 17 30 W..	1,825	.....	br. oz.....	Abundant.
20141	U.S.N.M.	2	D2716...	38 29 30 N.; 70 57 00 W..	1,631	.....	br. oz.....	Rare.
20142	U.S.N.M.	10+	D2751...	16 54 00 N.; 63 12 00 W..	697	40.0	bu. glob. oz..	Abundant.

Globigerina sacculifera—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
20143	U.S.N.M.	10+	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Abundant.
20144	U.S.N.M.	10+	D2756...	3 22 00 S.; 37 49 00 W..	417	40.5	gy. sp.....	Abundant.
20145	U.S.N.M.	1	D2761...	15 39 00 S.; 38 32 54 W..	818	39.0	pter. oz.....	Rare.
20146	U.S.N.M.	5	D2763...	24 17 00 S.; 42 48 30 W..	671	37.9	br. glob. oz..	Few.
20147	U.S.N.M.	4	H47.....	17 46 30 N.; 65 10 25 W..	1,482	.....	crs. co. s.....	Few.
20148	U.S.N.M.	10+	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz. for...	Abundant.
20149	U.S.N.M.	8	H49.....	17 37 30 N.; 65 15 00 W..	928	.....	oz. for.....	Common.
20150	U.S.N.M.	9	H56.....	17 44 15 N.; 65 27 50 W..	1,243	.....	co. oz. for...	Common.
20151	U.S.N.M.	10+	H57.....	17 49 06 N.; 65 29 00 W..	2,188	.....	oz. for.....	Abundant.
20152	U.S.N.M.	10+	H58.....	17 45 20 N.; 65 35 35 W..	1,345	.....	oz. for.....	Abundant.
20153	U.S.N.M.	10+	H60.....	17 39 00 N.; 65 44 00 W..	578	.....	co. s.....	Abundant.
20154	U.S.N.M.	9	H62.....	17 32 40 N.; 65 52 20 W..	2,017	.....	co. s. for.....	Common.
20155	U.S.N.M.	10+	H80.....	13 56 35 N.; 63 02 00 W..	684	.....	gy. m.....	Abundant.
20156	U.S.N.M.	10+	H121....	16 36 20 N.; 66 41 00 W..	2,501	.....	choc.glob.oz.	Abundant.
20157	U.S.N.M.	8	H133....	11 33 20 N.; 66 19 00 W..	533	.....	gy. m.....	Common.
20158	U.S.N.M.	10+	H189....	17 42 30 N.; 74 40 00 W..	803	.....	br. m.....	Abundant.

GLOBIGERINA HELICINA D'Orbigny.

Plate 4, fig. 9.

Globigerina helicina D'Orbigny, Ann. Sci. Nat., vol. 7, 1826, p. 277, No. 5.—Parker, Jones, and H. B. Brady, Ann. Mag. Nat. Hist., ser. 4, vol. 8, 1871, p. 175, pl. 11, fig. 113.—H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 287; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 605, pl. 81, figs. 4, 5.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 370, pl. 5, fig. 6.—Fornasini, Mem. Accad. Sci. Ist. Bologna, ser. 5, vol. 7, 1899, p. 583, pl. 3, figs. 11, 12.—Millett, Journ. Roy. Micr. Soc., 1903, p. 688, pl. 7, fig. 1.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 154.—Sidebottom, Mem. Proc. Manchester Lit. Philos. Soc., vol. 52, No. 13, 1908, p. 4, pl. 1, fig. 9.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 12, pl. 3, figs. 1, 2.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 149.

Description.—Test oblong or ovate, composed of several chambers more or less irregularly arranged, inflated, the later chambers being added on the periphery of the test without regard to the spiral arrangement of the earlier ones; wall reticulate; aperture on the basal side of the inner margin of the chamber, but also are added one or more accessory apertural openings on the upper side of the test, especially in the added last chambers.

Diameter up to 1 mm.

Distribution.—Specimens which can be referred to this species are rare in the *Albatross* dredgings. It is recorded from both the North and South Atlantic by Brady.

There seems to be some doubt as to whether this should be recognized as a valid species. It has very much the appearance of an abnormal form in specimens which I have found both in the Atlantic and Pacific. Some of the specimens of *G. rubra* where abnormal chambers are developed give much the appearance of the specimens of *G. helicina* figured by various authors.

Globigerina helicina—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
19902	U.S.N.M.	1	D2262...	° ′ ″ ° ′ ″ 39 54 45 N.; 69 29 45 W..	250	°F. 41.6	gn. m., s.....	Rare.

GLOBIGERINA AEQUILATERALIS H. B. Brady.

Plate 4, figs. 7, 8.

Cassidulina globulosa (part) Egger, Neues, Jahr. für Min., 1857, p. 296, pl. 11, fig. 4.

Globigerina aequilateralis H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 71; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 605, pl. 80, figs. 18–21; Journ. Roy. Micr. Soc., 1887, p. 916.—Wright, Proc. Belfast Nat. Field Club, 1884–5, App. 9, 1886, p. 332, pl. 27, fig. 9; Ann. Mag. Nat. Hist., vol. 4, ser. 6, 1889, p. 449; Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 488.—Chapman, Quart. Journ. Geol. Soc., vol. 48, 1892, p. 517, pl. 15, fig. 14.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 364, pl. 13, figs. 5–8.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 25, 1894, p. 86, pl. 14, fig. 767.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 37; Journ. Roy. Micr. Soc., 1896, p. 589, pl. 13, fig. 7.—Goës, Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 66.—Silvestri, Mem. Pont. Accad. Nuovi Lincei, vol. 15, 1899, p. 265, pl. 5, fig. 8.—Fornasini, Mem. Accad. Sci. Ist. Bologna, ser. 5, vol. 7, 1899, p. 580, pl. 4, figs. 3, 4.—Flint, Ann. Rep. U. S. Nat. Mus., 1897 (1899), p. 323, pl. 70, fig. 3.—Rhumbler, in Brandt, Nordisches Plankton, Heft 14, 1900, p. 20, figs. 21–23.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 404.—Millett, Journ. Roy. Micr. Soc., 1903, p. 689.—Chapman, Trans. New Zealand Inst., vol. 38, 1905, p. 100.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 152.—Sidebottom, Mem. Proc. Manchester Lit. Philos. Soc., vol. 52, No. 13, 1908, p. 4, pl. 1, fig. 10.—Chapman, Subantarctic Ids. New Zealand, 1909, p. 351; Journ. Linn. Soc. Zool., vol. 30, 1910, p. 417; Zool. Res. "Endeavour," pt. 3, 1912, p. 311.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 12, pl. 2, figs. 1–3; pl. 10, fig. 5.—Chapman, British Antarctic Exped., Geology, vol. 2, 1916–17, p. 69, pl. 5, fig. 37.—Heron-Allen and Earland, Trans. Zool. Soc. London, vol. 20, 1915, p. 680.—Mestayer, Trans. New Zealand Inst., vol. 48, 1916, p. 129.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 150.—Cushman, Bull. 103, U. S. Nat. Mus., 1918, p. 67.

Description.—Test composed of numerous inflated chambers arranged in a bilaterally symmetrical, planospiral coil of one and a half to two volutions; chambers increasing rapidly in size as added, usually five to six visible in side view; sutures much depressed, giving a lobulated contour; wall reticulate, often with broken spines; aperture large, an arched opening at the base of the chamber.

Diameter up to 1 mm.

Distribution.—The typical form of this species, that with the coil decidedly open, is found in abundance in the Caribbean and generally in the path of the Gulf Stream. Farther north there are bottom specimens which have the more involute character of the variety I have described as var. *involuta*.[2]

The typical form develops to a considerable size and it is possible in some specimens to see between the last whorl and the preceding one in side view. In the early development the test is somewhat trochoid, but this soon gives rise to a planospiral arrangement of the chambers.

Globigerina aequilateralis—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ °] ′ ″		°F.		
19701	U.S.N.M.	1	D2039...	38 19 26 N.; 68 20 20 W..	2,369	.....	glob. oz.....	Rare.
19702	U.S.N.M.	2	D2041...	39 22 50 N.; 68 25 00 W..	1,608	38.0	glob. oz.....	Rare.
19703	U.S.N.M.	2	D2043...	39 49 00 N.; 68 28 30 W..	1,467	38.5	glob. oz.....	Rare.
19704	U.S.N.M.	4	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Few.
19705	U.S.N.M.	1	D2097...	37 56 20 N.; 70 57 30 W..	1,917	.....	glob. oz.....	Rare.
19707	U.S.N.M.	2	D2112...	35 20 50 N.; 75 18 00 W..	16	73.5	s., blk. sp...	Rare.
19708	U.S.N.M.	1	D2115...	35 49 30 N.; 74 34 45 W..	813	39.0	m., fne. s....	Rare.
19709	U.S.N.M.	2	D2116...	35 45 23 N.; 74 31 25 W..	888	39.0	bu. m.....	Rare.
19710	U.S.N.M.	4	D2117...	15 24 20 N.; 63 31 30 W..	683	39.8	yl. m.....	Few.
19711	U.S.N.M.	1	D2138...	17 44 05 N.; 75 39 00 W..	23	.....	co., brk. sh..	Rare.
19712	U.S.N.M.	10+	D2144...	9 49 00 N.; 79 31 30 W..	896	.....	gn. m.....	Abundant.
19713	U.S.N.M.	1	D2160...	23 10 31 N.; 82 20 37 W..	167	.....	co.....	Rare.
19714	U.S.N.M.	4	D2174...	38 15 00 N.; 72 03 00 W..	1,594	.....	gy. m.....	Few.
19715	U.S.N.M.	8	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Common.
19716	U.S.N.M.	1	D2212...	39 59 30 N.; 70 30 00 W..	384	39.5	gn. m.....	Rare.
19717	U.S.N.M.	6	D2225...	36 05 30 N.; 69 51 45 W..	2,512	36.7	yl. oz.....	Common.
19718	U.S.N.M.	2	D2226...	37 00 00 N.; 71 54 00 W..	2,045	36.8	glob. oz.....	Rare.
19719	U.S.N.M.	1	D2312...	32 54 00 N.; 77 53 30 W..	88	57.8	ers. s.....	Rare.
19720	U.S.N.M.	2	D2314...	32 43 00 N.; 77 51 00 W..	159	47.4	ers. s.....	Rare.
19721	U.S.N.M.	3	D2352...	22 35 00 N.; 84 23 00 W..	463	45.0	wh. co.....	Few.
19722	U.S.N.M.	10+	D2358...	20 19 00 N.; 87 03 30 W..	222	.....	fne. wh. co..	Abundant.
19723	U.S.N.M.	10+	D2377...	29 07 30 N.; 88 08 00 W..	210	67.0	gy. m.....	Abundant.
19724	U.S.N.M.	10+	D2383...	28 32 00 N.; 88 06 00 W..	1,181	39.6	br. gn. m....	Abundant.
19725	U.S.N.M.	9	D2385...	28 51 00 N.; 88 18 00 W..	730	40.1	gy. m.....	Common.
19726	U.S.N.M.	6	D2388...	29 24 30 N.; 88 01 00 W..	35	.....	yl. s.....	Common.
19727	U.S.N.M.	10+	D2394...	28 38 30 N.; 87 02 00 W..	420	41.8	gn. m.....	Abundant.
19728	U.S.N.M.	10+	D2395...	28 36 15 N.; 86 50 00 W..	347	44.1	gy. m.....	Abundant.
19729	U.S.N.M.	10+	D2396...	28 34 00 N.; 86 48 00 W..	335	.....	gy. m.....	Abundant.
19730	U.S.N.M.	2	D2397...	28 42 00 N.; 86 36 00 W..	280	46.1	gy. m.....	Rare.
19731	U.S.N.M.	10+	D2398...	28 45 00 N.; 86 26 00 W..	227	48.6	gy. m.....	Abundant.
19732	U.S.N.M.	10+	D2399...	28 44 00 N.; 86 18 00 W..	196	51.6	gy. m.....	Abundant.
19733	U.S.N.M.	10+	D2400...	28 41 00 N.; 86 07 00 W..	169	.....	gy. m.....	Abundant.
19734	U.S.N.M.	6	D2405...	28 45 00 N.; 85 02 00 W..	30	.....	gy. s.....	Common.
19735	U.S.N.M.	3	D2415...	30 44 00 N.; 79 26 00 W..	440	45.6	ers. s.....	Few.
19736	U.S.N.M.	10+	D2420...	37 03 20 N.; 74 31 40 W..	104	47.7	bk. s.....	Abundant.
19737	U.S.N.M.	1	D2531...	40 42 00 N.; 66 33 00 W..	852	38.4	gy. m.....	Rare.
19738	U.S.N.M.	3	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Few.
19740	U.S.N.M.	2	D2563...	39 18 30 N.; 71 23 30 W..	1,422	37.4	gy. oz.....	Rare.
19741	U.S.N.M.	1	D2564...	39 22 00 N.; 71 23 30 W..	1,390	37.3	gy. oz.....	Rare.
19742	U.S.N.M.	9	D2568...	39 15 00 N.; 68 08 00 W..	1,781	36.9	gy. oz.....	Common.
19706	U.S.N.M.	10+	D2614...	34 09 00 N.; 76 02 00 W..	168	.....	gy. s.....	Abundant.
19739	U.S.N.M.	10+	D2629...	23 48 40 N.; 75 10 40 W..	1,169	38.4	co. s.....	Abundant.
19743	U.S.N.M.	1	D2639...	25 01 50 N.; 80 15 10 W..	56	.....	co. s.....	Rare.
20250	U.S.N.M.	8	D2641...	25 11 30 N.; 80 10 00 W..	60	69.2	co. s.....	Common.
20251	U.S.N.M.	1	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Rare.
20252	U.S.N.M.	3	D2644...	25 01 00 N.; 80 00 00 W..	193	43.4	gy. s.....	Few.
20253	U.S.N.M.	1	D2648...	25 53 00 N.; 80 03 30 W..	84	.....	gn. m.....	Rare.
20254	U.S.N.M.	10+	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Abundant.
20255	U.S.N.M.	7	D2668...	30 58 30 N.; 79 38 30 W..	294	46.3	gy. s.....	Common.
20256	U.S.N.M.	5	D2677...	32 39 00 N.; 76 50 30 W..	478	39.3	gn. m.....	Few.
20257	U.S.N.M.	3	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Few.
20258	U.S.N.M.	10+	D2679...	32 40 00 N.; 76 40 30 W..	782	38.6	lt. gy. oz....	Abundant.
20259	U.S.N.M.	2	D2714...	38 22 00 N.; 70 17 30 W..	1,825	.....	br. oz.....	Rare.
20260	U.S.N.M.	1	D2716...	38 29 30 N.; 70 57 00 W..	1,631	.....	br. oz.....	Rare.
20261	U.S.N.M.	7	D2751...	16 54 00 N.; 63 12 00 W..	687	40.0	glob. oz.....	Common.

[2] Proc. U. S. Nat. Mus., vol. 51, 1917, p. 662.

Globigerina aequilateralis—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
20262	U.S.N.M.	9	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Common.
20263	U.S.N.M.	10+	D2756...	3 22 00 S.; 37 49 00 W..	417	40.5	gy. sp.....	Abundant.
20264	U.S.N.M.	1	D2758...	6 59 00 S.; 34 47 00 W..	20	79.0	brk. sh.....	Rare.
20265	U.S.N.M.	9	D2761...	15 39 00 S.; 38 32 54 W..	818	39.0	pter. oz.....	Common.
20266	U.S.N.M.	1	D2763...	24 17 00 S.; 42 48 30 W..	671	37.9	br. glob. oz..	Rare.
20267	U.S.N.M.	10+	H47.....	17 46 30 N.; 65 10 25 W..	1,482	.....	crs. co. s....	Abundant.
20268	U.S.N.M.	9	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz. for...	Common.
20269	U.S.N.M.	10+	H49.....	17 37 30 N.; 65 15 00 W..	928	.....	oz. for.....	Abundant.
20270	U.S.N.M.	10+	H56.....	17 44 15 N.; 65 27 50 W..	1,243	.....	co. oz. for...	Abundant.
20271	U.S.N.M.	7	H57.....	17 49 06 N.; 65 29 00 W..	2,188	.....	oz. for.....	Common.
20272	U.S.N.M.	10+	H58.....	17 45 20 N.; 65 35 35 W..	1,345	.....	oz. for.....	Abundant.
20273	U.S.N.M.	10+	H60.....	17 39 00 N.; 65 44 00 W..	578	.....	co. s. for.....	Abundant.
20274	U.S.N.M.	10+	H62.....	17 32 40 N.; 65 52 20 W..	789	.....	oz. for.....	Abundant.
20275	U.S.N.M.	2	H80.....	13 56 35 N.; 63 02 00 W..	684	.....	gy. m.....	Rare.
20276	U.S.N.M.	1	H133....	11 33 20 N.; 66 19 00 W..	533	.....	gy. m.....	Rare.
20277	U.S.N.M.	10+	H189....	17 42 30 N.; 74 40 00 W..	803	.....	br. m.....	Abundant

GLOBIGERINA CONCINNA Reuss.

Under this name Egger[3] records and figures specimens from numerous localities in the eastern Atlantic, between Madeira and Cape Verde Islands, Cape Verde, West Africa, West South Africa, etc. The form figured as far as can be made out is more flattened than the typical *G. dubia*. There is little in the western Atlantic that I should feel justified in referring to this species.

GLOBIGERINA OCELLATA (Ehrenberg).

Egger[4] records and figures specimens from the eastern Atlantic and elsewhere as "*Globigerina* (*Rotalia*) *ocellata* Ehrenberg." The figures are not such as would allow a definite determination of just what Egger had that he placed under this name.

GLOBIGERINA DIPLOSTOMA Reuss.

Egger[5] records and figures under this name specimens from a number of localities in the Atlantic as well as elsewhere. It belongs in the group which I have here included under *G. dubia* Egger. Egger's records are from the eastern Atlantic from the coast of Portugal southward along the coast of Africa.

GLOBIGERINA QUADRILOBA D'Orbigny.

The ventral side of a specimen which is referred to this species is figured by Egger.[6] He gives an Atlantic record from off West Africa, but it is not definite at all just what he may have had.

[3] Abh. kön. bay. Akad. Wiss. München, Cl. II. vol. 18, 1893, p. 363, pl. 13, figs. 29–32.
[4] Idem, p. 360, pl. 13, figs. 10, 11, 78.
[5] Idem, p. 364, pl. 13, figs. 33, 34.
[6] Idem, p. 362, pl. 13, fig. 35.

GLOBIGERINA REGULARIS D'Orbigny.

Egger[7] figures specimens under this name. A number of the *Gazelle* stations from which he obtained specimens are in the eastern and southern Atlantic. I have had no specimens that I could refer to this species.

GLOBIGERINA LINNEIANA (D'Orbigny)?

Brady in the *Challenger* report (p. 598) refers D'Orbigny's *Rosalina linneiana* to *Globigerina*. The original specimens were from shore sands of Cuba. There are numerous Cretaceous specimens referred to this name following Brady's use of it in the *Challenger* report. No such form has appeared in the *Albatross* collections.

Genus ORBULINA D'Orbigny, 1839.

Orbulina D'Orbigny (type, *O. universa* D'Orbigny), in De la Sagra, Hist. Fis. Pol. Nat. Cuba, 1839, "Foraminifères," p. 3.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 606.—Chapman, The Foraminifera, 1902, p. 206.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 13.

Description.—Test in the early stages composed of several *Globigerina*-like chambers rapidly increasing in size as added, finally entirely surrounded by the adult chamber which is spherical, with numerous small pores, and one large circular orifice, or occasionally more than one; wall reticulated, in living condition with long, fine spines.

This genus is evidently derived from *Globigerina*, as a later development for the young Globigerine stages have often been found within the spherical chamber. Just what becomes of the earlier chambers in the empty globular chamber as usually found is not entirely known but it is probably resorbed. They are more often found in smaller than in larger spherical chambers.

According to Chapman the geological history goes back to the pre-Cretaceous.

ORBULINA UNIVERSA D'Orbigny.

Plate 5, figs. 2–9.

"Polymorpha sphaerulae vitrae," Soldani, Testaceographia, vol. 1, pt. 2, 1791, p. 116, pl. 119, figs. *I–N*.

Orbulina universa D'Orbigny, in De la Sagra, Hist. Fis. Pol. Nat. Cuba, 1839, "Foraminifères," p. 3, pl. 1, fig. 1; in Barker, Webb, and Berthelot, Hist. Nat. Îles Canaries, vol. 2, pt. 2, "Foraminifères," 1839, p. 122, pl. 1, fig. 1; Foram. Bass. Tert. Vienne, 1846, p. 22, pl. 1, fig. 1.—Bailey, Smiths. Contr., vol. 2, 1851, p. 9, pl., fig. 1.—Williamson, Rec. Foram. Great Britain, 1858, p. 2, pl. 1, fig. 4.—Carpenter, Parker, and Jones, Introd. Foram., 1862; p. 176, pl. 12, fig. 8.—Parker and Jones, Philos. Trans., vol. 155, 1865, p. 364, pl. 16, figs. 13, 14.—Balkwill and Wright, Proc. Roy. Irish Acad., ser. 2, vol. 3, 1882, p. 549.—Goës,

[7] Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 361, pl. 13, figs. 15–18.

Kongl. Svensk. Vet. Akad. Handl., vol. 19, No. 4, 1882, p. 90, pl. 6, fig. 194.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 608, pl. 78; pl. 81, figs. 8–26; pl. 82, figs. 1–3.—Woodward and Thomas, 13th Ann. Rep. Geol. Nat. Hist. Surv. Minnesota for 1884 (1885), p. 174, pl. 4, figs. 25–31.—Balkwill and Wright, Trans. Roy. Irish Acad., vol. 28, 1885, p. 348.—Sherborn and Chapman, Journ. Roy. Micr. Soc., 1886, p. 756, pl. 16, fig. 9.—H. B. Brady, Journ. Roy. Micr. Soc., 1887, p. 916.—H. B. Brady, Parker, and Jones, Trans. Zool. Soc. London, vol. 12, 1888, p. 225, pl. 45, figs. 7, 8, 14.—Wright, Ann. Mag. Nat. Hist., vol. 4, ser. 6, 1889, p. 449.—Pearcey, Trans. Glasgow Nat. Hist. Soc., vol. 2, 1890, p. 178.—Wright, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 488.—Robertson, Proc. Nat. Hist. Soc. Glasgow, pt. 3, 1892, p. 241.—Egger, Abh. kön. bay. Akad., Wiss. München, Cl. II, vol. 18, 1893, p. 374, pl. 14, figs. 7–9, 11, 12, 39, 40.—Fornasini, Mem. Accad. Sci. Ist. Bologna, ser. 5, vol. 3, 1893, p. 430, pl. 2, fig. 12.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 38.—Lister, Philos. Trans., vol. 186, 1895, p. 408, figs. *a–e*.—Rhumbler, Abhandl. deutsch, Zool. Ges., 1897, p. 174, fig. 21.—Silvestri, Mem. Pont. Accad. Nuovi Lincei, vol. 15, 1899, p. 266, pl. 5, figs. 11–16, 19–22.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 322, pl. 69, fig. 1.—Rhumbler, in Brandt, Nordisches Plankton, Heft 14, 1900, p. 27, figs. 27–30.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 404.—Millett, Journ. Roy. Micr. Soc., 1903, p. 690.—Chapman, Trans. New Zealand Inst., vol. 38, 1905, p. 101.—Dakin, Rep. Ceylon Pearl Oyster Fish., vol. 5, 1906, p. 237.—Chapman, Journ. Quekett Micr. Club, ser. 2, vol. 10, 1907, p. 133.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 155.—Sidebottom, Mem. Proc. Manchester Lit. Philos. Soc., vol. 52, No. 13, 1908, p. 5.—Chapman, Subantarctic Ids. New Zealand, 1909, p. 351; Journ. Linn. Soc. Zool., vol. 30, 1910, p. 418.—Sidebottom, Mem. Proc. Manchester Lit. Philos. Soc., vol. 54, No. 16, 1910, p. 24.—Bagg, Bull. 513, U. S. Geol. Survey, 1912, p. 79, pl. 23, fig. 1.—Chapman, Zool. Res. "Endeavour," pt. 3, 1913, p. 311.—Heron-Allen and Earland, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 106.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 14, pl. 6; pl. 7; pl. 11, fig. 3.—Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1914, p. 1025.—Chapman, Biol. Res. "Endeavour," vol. 3, pt. 1, 1915, p. 27.—Heron-Allen and Earland, Trans. Zool. Soc. London, vol. 20, 1915, p. 681; Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 268; Journ. Roy. Micr. Soc., 1916, p. 49.—Mestayer, Trans. New Zealand Inst., vol. 48, 1916, p. 129.—Cushman, Bull. 103, U. S. Nat. Mus., 1918, p. 67; Bull. 676, U. S. Geol. Survey, 1918, p. 12.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 151.—Cushman, Proc. U. S. Nat. Mus., vol. 56, 1919, p. 622; Publ. 291, Carnegie Inst. Washington, 1919, p. 40; Bull. 100. U. S. Nat. Mus., vol. 4, 1921, p. 295.

Description.—Test in its early development consisting of a series of *Globigerina*-like chambers, the adult developing a globular chamber about this early *Globigerina*-like portion; surface usually finely reticulate, with a small pit at the bottom of each reticulation and one larger circular aperture forming the main opening into the interior; in the living condition the surface develops long spines from its exterior.

Diameter up to 1 mm.

Distribution.—Specimens of this species occur very widely distributed, as would be expected of a species which is so well adapted for a pelagic life. It is very finely developed and very abundant in the bottom samples from the Caribbean, but good specimens are found in most bottom samples where Globigerinidae occur at all. The specimens outside the Tropics, however, are usually smaller.

The adaptation to the pelagic condition is first of all brought about by the spherical form. There are a great many small openings beside the ordinary punctae and one opening of still larger size, thus allowing easy access for the protoplasm to the exterior. In a living pelagic specimen there are developed very numerous elongate spines from the exterior and these evidently serve in some way to support the extended protoplasm.

The young is Globigerine in character and shows that *Orbulina* belongs to that group and is a genus derived from a Globigerine ancestry. The addition of the spherical chamber comes as the last character in its development. There are many spherical chambers in which these early chambers do not appear. This may be from two causes. One may be that the earlier chambers are resorbed as occurs elsewhere in the animal kingdom. The other is that these may be microspheric forms of the species and the earlier development retained as is the case elsewhere among the foraminifera, the smaller globular chambers without the early stages being the megalospheric form of the species. Whether the globular chamber grows larger at all after its development is a mooted question. There are often found specimens, especially among the larger ones, in which several layers of the test are developed. These may possibly be additions on the exterior of the smaller test represented by the inner layer.

In some specimens two large chambers are developed instead of one, a condition that would be easily accounted for on the basis of development of a final globular chamber after a series of coiled ones.

Orbulina universa—*material examined.*

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19347	U.S.N.M.	10+	D2003...	37 16 30 N.; 74 20 36 W..	641	.....	.....	Abundant.
19348	U.S.N.M.	10+	D2018...	37 12 22 N.; 74 20 04 W..	788	39.0	bu. m.....	Abundant.
19349	U.S.N.M.	3	D2029...	39 42 00 N.; 70 47 00 W..	1,168	38.5	gy. m.....	Few.
19350	U.S.N.M.	10+	D2034...	39 27 10 N.; 69 56 20 W..	1,346	38.0	glob. oz.....	Abundant.
19351	U.S.N.M.	10+	D2035...	39 26 16 N.; 70 02 37 W..	1,362	.....	glob. oz.....	Abundant.
19352	U.S.N.M.	10+	D2039...	38 19 26 N.; 68 20 20 W..	2,369	.....	glob. oz.....	Abundant.
19353	U.S.N.M.	10+	D2041...	39 22 50 N.; 68 25 09 W..	1,608	38.0	glob. oz.....	Abundant.
19354	U.S.N.M.	10+	D2042...	39 33 00 N.; 68 26 45 W..	1,555	38.5	glob. oz.....	Abundant.
19355	U.S.N.M.	10+	D2043...	39 49 00 N.; 68 28 30 W..	1,467	38.5	glob. oz.....	Abundant.
19356	U.S.N.M.	10+	D2046...	40 02 49 N.; 68 49 00 W..	407	40.0	bu. m.....	Abundant.
19357	U.S.N.M.	1	D2048...	40 02 00 N.; 68 50 30 W..	547	29.0	crs. s.....	Rare.
19358	U.S.N.M.	10+	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Abundant.
19359	U.S.N.M.	10+	D2052...	39 40 05 N.; 69 21 25 W..	1,098	45.0	glob. oz.....	Abundant.

Orbulina universa—material examined—Continued.

Cat. No.	Coll. of—	No. of speci-mens.	Station.	Locality.	Depth in fath-oms.	Bot-tom tem-pera-ture.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
19360	U.S.N.M.	1	D2063...	42 23 00 N.; 66 23 00 W..	141	46.0	s., crs. g.....	Rare.
19361	U.S.N.M.	4	D2076...	41 13 00 N.; 66 00 50 W..	906	.....	bu. m.....	Few.
19362	U.S.N.M.	1	D2078...	41 11 30 N.; 66 12 20 W..	499	40.0	gy. m., s....	Rare.
19363	U.S.N.M.	1	D2084...	40 16 50 N.; 67 05 15 W..	1,290	40.0	bu. m., s....	Rare.
19364	U.S.N.M.	1	D2093...	39 42 50 N.; 71 01 20 W..	1,000	39.0	for., s.....	Rare.
19365	U.S.N.M.	10+	D2097...	37 56 20 N.; 70 57 30 W..	1,917	.....	glob. oz.....	Abundant.
19366	U.S.N.M.	7	D2099...	37 12 20 N.; 69 39 00 W..	2,949	.....	glob. oz.....	Common.
19367	U.S.N.M.	10+	D2105...	37 50 00 N.; 73 03 50 W..	1,395	41.0	glob. oz.....	Abundant.
19368	U.S.N.M.	10+	D2106...	37 41 20 N.; 73 03 20 W..	1,497	42.5	glob. oz.....	Abundant.
19369	U.S.N.M.	10+	D2109...	35 14 20 N.; 74 59 10 W..	142	50.5	bu. m.....	Abundant.
19370	U.S.N.M.	6	D2110...	35 12 10 N.; 74 57 15 W..	516	40.0	bu. m.....	Common.
19371	U.S.N.M.	10+	D2111...	35 09 50 N.; 74 57 40 W..	938	.....	gn. m.....	Abundant.
19372	U.S.N.M.	4	D2116...	35 45 23 N.; 74 31 25 W..	888	39.0	bu. m.,fne.s.	Few.
19373	U.S.N.M.	10+	D2117...	15 24 20 N.; 63 31 30 W..	683	39.8	yl.m.,fne.s..	Abundant.
19374	U.S.N.M.	10+	D2138...	17 44 05 N.; 75 39 00 W..	23	.....	co., brk. sh..	Abundant.
19375	U.S.N.M.	10+	D2140...	17 36 10 N.; 76 46 05 W..	966	39.7	s.....	Abundant.
19376	U.S.N.M.	10+	D2144...	9 49 00 N.; 79 31 30 W..	896	.....	gn. m.....	Abundant.
19377	U.S.N.M.	10+	D2150...	13 34 45 N.; 81 21 10 W..	382	45.8	wh. crs. s...	Abundant.
19378	U.S.N.M.	10+	D2160...	23 10 31 N.; 82 20 37 W..	167	.....	co.....	Abundant.
19379	U.S.N.M.	10+	D2174...	38 15 00 N.; 72 03 00 W..	1,594	.....	gy. m.....	Abundant.
19380	U.S.N.M.	1	D2182...	39 25 30 N.; 71 41 00 W..	861	39.0	gy. m., fne. s.	Rare.
19381	U.S.N.M.	8	D2189...	39 49 30 N.; 70 26 00 W..	660	39.7	gn. m., s....	Common.
19382	U.S.N.M.	10+	D2192...	39 46 30 N.; 70 14 45 W..	1,060	38.6	gy. oz.....	Abundant.
19383	U.S.N.M.	1	D2194...	39 43 45 N.; 70 07 00 W..	1,140	38.4	oz.....	Rare.
19384	U.S.N.M.	1	D2196...	39 35 00 N.; 69 44 00 W..	1,230	38.0	gn. m.....	Rare.
19385	U.S.N.M.	10+	D2202...	39 38 00 N.; 71 39 45 W..	515	39.1	gn. m.....	Abundant.
19386	U.S.N.M.	10+	D2203...	39 34 15 N.; 71 41 15 W..	705	38.9	gn. m., s....	Abundant.
19387	U.S.N.M.	10+	D2204...	39 30 30 N.; 71 44 30 W..	728	39.1	br. m.....	Abundant.
19388	U.S.N.M.	10+	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Abundant.
19389	U.S.N.M.	10+	D2208...	39 33 00 N.; 71 16 15 W..	1,178	38.4	gn. m.....	Abundant.
19390	U.S.N.M.	10+	D2217...	39 47 20 N.; 69 34 15 W..	924	38.1	gy. m.....	Abundant.
19391	U.S.N.M.	6	D2223...	37 48 30 N.; 69 43 30 W..	2,516	36.4	glob. oz.....	Common.
19392	U.S.N.M.	10+	D2224...	36 16 30 N.; 68 21 00 W..	2,574	36.8	glob. oz.....	Abundant.
19393	U.S.N.M.	10+	D2225...	36 05 30 N.; 69 51 45 W..	2,512	36.7	yl. oz.....	Abundant.
19394	U.S.N.M.	10+	D2226...	37 00 00 N.; 71 54 00 W..	2,045	36.8	glob. oz.....	Abundant.
19395	U.S.N.M.	10+	D2228...	37 25 00 N.; 73 06 00 W..	1,582	36.8	br. m.....	Abundant.
19396	U.S.N.M.	10+	D2230...	38 27 00 N.; 73 02 00 W..	1,168	36.8	gy. oz.....	Abundant.
19397	U.S.N.M.	10+	D2231...	38 29 00 N.; 73 09 00 W..	965	36.8	gy. oz.....	Abundant.
19398	U.S.N.M.	5	D2234...	39 09 00 N.; 72 03 15 W..	810	38.6	gn. m.....	Few.
19399	U.S.N.M.	1	D2242...	40 15 30 N.; 70 27 00 W..	58	51.4	gn. m.....	Rare.
19400	U.S.N.M.	10+	D2262...	39 54 45 N.; 69 29 45 W..	250	41.6	gn. m., s....	Abundant.
19401	U.S.N.M.	1	D2311...	32 55 00 N.; 77 54 00 W..	79	59.1	crs. s.....	Rare.
19402	U.S.N.M.	10+	D2312...	32 54 00 N.; 77 53 30 W..	88	57.8	crs. s.....	Abundant.
19403	U.S.N.M.	10+	D2313...	32 53 00 N.; 77 53 00 W..	99	57.2	crs. s.....	Abundant.
19404	U.S.N.M.	10+	D2314...	32 43 00 N.; 77 51 00 W..	159	47.4	crs. s.....	Abundant.
19405	U.S.N.M.	5	D2318...	24 25 45 N.; 81 46 00 W..	45	75.0	co.....	Few.
19406	U.S.N.M.	10+	D2335...	23 10 39 N.; 82 20 21 W..	201	.....	.....	Abundant.
19407	U.S.N.M.	10+	D2352...	22 35 00 N.; 84 23 00 W..	463	45.0	wh. co.....	Abundant.
19408	U.S.N.M.	10+	D2358...	20 19 00 N.; 87 03 30 W..	222	.....	fne. wh. co..	Abundant.
19409	U.S.N.M.	4	D2369...	29 16 30 N.; 85 32 00 W..	26	.....	crs. gy. s....	Few.
19410	U.S.N.M.	2	D2370...	29 18 15 N.; 85 32 00 W..	25	.....	crs. gy. s....	Rare.
19411	U.S.N.M.	10+	D2377...	29 07 30 N.; 88 08 00 W..	210	67.0	gy. m.....	Abundant.
19412	U.S.N.M.	8	D2378...	29 14 30 N.; 88 09 30 W..	68	.....	gy. m.....	Common.
19413	U.S.N.M.	10+	D2379...	28 00 15 N.; 87 42 00 W..	1,467	.....	yl. oz.....	Abundant.
19414	U.S.N.M.	10+	D2381...	28 05 00 N.; 87 56 15 W..	1,330	.....	lt. br. m....	Abundant.
19415	U.S.N.M.	10+	D2382...	28 19 45 N.; 88 01 30 W..	1,255	39.6	gy. m.....	Abundant.
19416	U.S.N.M.	10+	D2383...	28 32 00 N.; 88 06 00 W..	1,181	39.6	br. gn. m....	Abundant.
19417	U.S.N.M.	10+	D2385...	28 51 00 N.; 88 18 00 W..	730	40.1	gy. m.....	Abundant.
19418	U.S.N.M.	10+	D2388...	29 24 30 N.; 88 01 00 W..	35	.....	yl. s.....	Abundant.
19419	U.S.N.M.	10+	D2392...	28 47 30 N.; 87 27 00 W..	724	40.7	br. gy. m....	Abundant.
19420	U.S.N.M.	10+	D2393...	28 43 00 N.; 87 14 30 W..	525	41.1	lt. gy. m....	Abundant.
19421	U.S.N.M.	10+	D2394...	28 38 30 N.; 87 02 00 W..	420	41.8	gn. m.....	Abundant.
19422	U.S.N.M.	10+	D2395...	28 36 15 N.; 86 50 00 W..	347	44.1	gy. m.....	Abundant.
19423	U.S.N.M.	10+	D2396...	28 34 00 N.; 86 48 00 W..	335	.....	gy. m.....	Abundant.
19424	U.S.N.M.	10+	D2398...	28 45 00 N.; 86 26 00 W..	227	48.6	gy. m.....	Abundant.
19425	U.S.N.M.	10+	D2399...	28 44 00 N.; 86 18 00 W..	196	51.6	gy. m.....	Abundant.
19426	U.S.N.M.	10+	D2400...	28 41 00 N.; 86 07 00 W..	169	.....	gy. m.....	Abundant.
19427	U.S.N.M.	7	D2405...	28 45 00 N.; 85 02 00 W..	30	.....	gy. s.....	Common.
19428	U.S.N.M.	1	D2409...	27 04 00 N.; 83 21 15 W..	26	.....	crs. gy. s....	Rare.
19429	U.S.N.M.	2	D2415...	30 41 00 N.; 79 26 00 W..	440	45.6	crs. s.....	Rare.
19430	U.S.N.M.	6	D2416...	31 26 00 N.; 79 07 00 W..	276	53.8	co., brk. sh..	Common.
19431	U.S.N.M.	7	D2420...	37 03 20 N.; 74 31 40 W..	104	47.7	bk. s., m....	Common.
19432	U.S.N.M.	3	D2528...	41 47 00 N.; 65 37 30 W..	677	38.7	br. s.....	Few.
19433	U.S.N.M.	10+	D2530...	40 53 30 N.; 66 24 00 W..	956	38.4	gy. oz.....	Abundant.
19434	U.S.N.M.	10+	D2531...	40 42 00 N.; 66 33 00 W..	852	38.4	gy. m.....	Abundant.
19435	U.S.N.M.	8	D2534...	40 01 00 N.; 67 29 15 W..	1,234	37.8	gy. oz.....	Common.
19436	U.S.N.M.	10+	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Abundant.
19437	U.S.N.M.	10+	D2547...	39 54 30 N.; 70 20 00 W..	390	39.6	gn. m.....	Abundant.

Orbulina universa—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
19438	U.S.N.M.	10+	D2550 ..	39 44 30 N.; 70 30 45 W..	1,081	38.5	br. m.....	Abundant.
19439	U.S.N.M.	6	D2552...	39 47 07 N.; 70 35 00 W..	721	39.6	gy. oz.....	Common.
19440	U.S.N.M.	10+	D2562...	39 15 30 N.; 71 25 00 W..	1,434	37.3	gy. oz.....	Abundant.
19441	U.S.N.M.	10+	D2563...	39 18 30 N.; 71 23 30 W..	1,422	37.4	gy. oz.....	Abundant.
19442	U.S.N.M.	10+	D2564...	39 22 00 N.; 71 23 30 W..	1,390	37.3	gy. oz.....	Abundant.
19443	U.S.N.M.	1	D2566...	37 23 00 N.; 68 08 00 W..	2,620	36.4	gy. oz.....	Rare.
19444	U.S.N.M.	8	D2568...	39 15 00 N.; 68 08 00 W..	1,781	36.9	gy. oz.....	Common.
19445	U.S.N.M.	6	D2572...	40 29 00 N.; 66 04 00 W..	1,769	37.8	gy. oz.....	Common.
20159	U.S.N.M.	4	D2581...	39 43 00 N.; 71 34 00 W..	394	.....	gn. m.....	Few.
20160	U.S.N.M.	5	D2584...	39 05 30 N.; 72 23 20 W..	541	39.5	gy. m.....	Few.
20161	U.S.N.M.	1	D2585 ..	39 08 30 N.; 72 17 00 W..	542	39.0	dk. gy. m...	Rare.
20162	U.S.N.M.	10+	D2586...	39 02 40 N.; 72 40 00 W..	328	40.2	dk. gy. m...	Abundant.
20163	U.S.N.M.	10+	D2614...	34 09 00 N.; 76 02 00 W..	168	.....	gy. s.....	Abundant.
20164	U.S.N.M.	10+	D2629...	23 48 40 N.; 75 10 40 W..	1,169	38.4	co. s.....	Abundant.
20165	U.S.N.M.	3	D2639...	25 04 50 N.; 80 15 10 W..	56	.....	co. s.....	Few.
20166	U.S.N.M.	10+	D2641 ..	25 11 30 N.; 80 10 00 W..	60	69.2	co. s.....	Abundant.
20167	U.S.N.M.	2	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Rare.
20168	U.S.N.M.	5	D2644...	25 40 00 N.; 80 00 00 W..	193	43.4	gy. s.....	Few.
20169	U.S.N.M.	10+	D2648...	25 53 00 N.; 80 03 30 W..	84	.....	gn. m.....	Abundant.
20170	U.S.N.M.	10+	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Abundant.
20171	U.S.N.M.	10+	D2668...	30 58 30 N.; 79 38 30 W..	294	46.3	gy. s.....	Abundant.
20172	U.S.N.M.	10+	D2677...	32 39 00 N.; 76 50 30 W..	478	39.3	gn. m.....	Abundant.
20173	U.S.N.M.	8	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Common.
20174	U.S.N.M.	10+	D2684...	39 35 00 N.; 70 54 00 W..	1,106	.....	br. co.....	Abundant.
20196	U.S.N.M.	8	D2710...	40 06 00 N.; 68 01 00 W..	984	.....	gn. m.....	Common.
20175	U.S.N.M.	10+	D2713...	38 20 00 N.; 70 08 30 W..	1,859	.....	br. oz.....	Abundant.
20176	U.S.N.M.	10+	D2714...	38 22 00 N.; 70 17 30 W..	1,825	.....	br. oz.....	Abundant.
20177	U.S.N.M.	10+	D2716...	38 29 30 N.; 70 57 00 W..	1,631	.....	br. oz.....	Abundant.
20178	U.S.N.M.	10+	D2748...	39 31 00 N.; 71 14 30 W..	1,163	37.8	gy. m.....	Abundant.
20179	U.S.N.M.	10+	D2751...	16 54 00 N.; 63 12 00 W..	687	40.0	bu. glob. oz.	Abundant.
20180	U.S.N.M.	10+	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Abundant.
20181	U.S.N.M.	5	D2756...	3 22 00 S.; 37 49 00 W...	417	40.5	gy. sp.....	Few.
20182	U.S.N.M.	3	D2761...	15 39 00 S.; 38 32 54 W..	818	39.0	pter. oz.....	Few.
20183	U.S.N.M.	10+	D2763...	24 17 00 S.; 42 48 30 W...	671	37.9	br. glob. oz..	Abundant.
20184	U.S.N.M.	10+	H47.....	17 46 30 N.; 65 10 25 W..	1,482	.....	crs. co. s....	Abundant.
20185	U.S.N.M.	10+	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz. for...	Abundant.
20186	U.S.N.M.	10+	H49.....	17 37 30 N.; 65 15 00 W..	928	.....	oz. for.....	Abundant.
20187	U.S.N.M.	10+	H56.....	17 44 15 N.; 65 27 50 W..	1,243	.....	co. oz. for...	Abundant.
20188	U.S.N.M.	10+	H57.....	17 49 06 N.; 65 29 00 W..	2,188	.....	oz. for.....	Abundant.
20189	U.S.N.M.	9	H58.....	17 45 20 N.; 65 35 35 W..	1,345	.....	oz. for.....	Common.
20190	U.S.N.M.	10+	H60.....	17 49 00 N.; 65 44 00 W..	578	.....	co. s. for....	Abundant.
20191	U.S.N.M.	10+	H62.....	17 32 40 N.; 65 52 20 W..	2,017	.....	co. s. for....	Abundant.
20192	U.S.N.M.	10+	H80.....	13 56 35 N.; 63 02 00 W..	684	.....	gy. m.....	Abundant.
20193	U.S.N.M.	10+	H121....	16 36 20 N.; 66 41 00 W..	2,501	.....	choc. glob. oz.	Abundant.
20194	U.S.N.M.	10+	H133....	11 33 20 N.; 66 19 00 W..	533	.....	gy. m.....	Abundant.
20195	U.S.N.M.	10+	H189....	17 42 30 N.; 74 40 00 W..	803	.....	br. m. for...	Abundant.

ORBULINA POROSA (Terquem).

Globulina porosa TERQUEM, Foram. du Lias, Mem. 1, 1858, p. 633.
Orbulina porosa H. B. BRADY, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 611, pl. 81, fig. 27.

Brady refers to this species some very coarsely reticulate specimens from the following stations: *Challenger*, off Culebra Island, West Indies, 390 fathoms (713 meters), and from *Valorous* stations in the North Atlantic, station 9 in 1,750 fathoms (3,200 meters), and station 15 in 1,485 fathoms (2,716 meters).

I have had *Albatross* dredgings from near the *Challenger* station recorded above, but have not seen specimens which I could refer to this species.

Genus HASTIGERINA Wyville Thomson, 1876.

Nonionina (part) D'Orbigny, Foram. Amèr. Mèrid., 1839, p. 27.
Lituola (part) Jones and Parker, Quart. Journ. Geol. Soc., vol. 16, 1860, p. 302, table, No. 181.
Globigerina (part) Parker and Jones, Philos. Trans., vol. 155, 1865, p. 366.
Hastigerina Wyville Thomson (type, *H. pelagica* (D'Orbigny), Proc. Roy. Soc., vol. 24, 1876, p. 534.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 612.—Chapman, The Foraminifera, 1902, p. 206.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 15.

Description.—Test composed of numerous chambers arranged in a planospiral manner, inflated; surface with numerous spines, the edges parallel and toothed; aperture large, broad, oval, at the inner margin of the chamber.

There is but a single species which seems to be entirely pelagic, although the empty tests are found in the *Globigerina*-ooze.

HASTIGERINA PELAGICA (D'Orbigny).

Plate 6, figs. 1–8.

Nonionina pelagica D'Orbigny, Foram. Amèr. Mèrid., 1839, p. 27, pl. 3, figs. 13, 14.
Lituola pelagica Jones and Parker, Quart. Journ. Geol. Soc., vol. 16, 1860, p. 302, table, No. 181.
Globigerina pelagica Parker and Jones, Philos. Trans., vol. 155, 1865, p. 366.
Hastigerina pelagica H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 77; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 613, figs. 1–8.—Pearcey, Trans. Glasgow Nat. Hist. Soc., vol. 2, 1890, p. 178.—Wright. Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 489.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 372, pl. 13, figs. 53, 54.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 38.—Goës, Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 67.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 324, pl. 70, fig. 4.—Silvestri, Mem. Pont. Accad. Nuovi Lincei, vol. 15, 1899, p. 273, pl. 5, fig. 9.—Rhumbler, in Brandt, Nordisches Plankton, 1900, p. 29, fig. 31.—Millett, Journ. Roy. Micr. Soc., 1903, p. 691.—Dakin, Rep. Ceylon Pearl Oyster Fish., vol. 5, 1906, p. 237.—Chapman, Journ. Linn. Soc. Zool., vol. 30, 1910, p. 418.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 15, pl. 8.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 151.
Hastigerina murrayi Wyville Thomson, Proc. Roy. Soc., vol. 24, 1876, p. 534, pls. 22, 23.

Description.—Test composed of numerous chambers arranged generally in a simple spiral, the chambers themselves gradually increasing as added and the sutures much depressed; wall finely perforate, nearly smooth except for long rodlike spines with parallel sides, the edges of which are serrate, especially toward the base; aperture very large, oval, at the inner border of the last-formed chamber.

Diameter of the test without spines up to 1.30 mm.

Distribution.—This is a truly pelagic species, having been taken in all the great ocean basins, especially in tropical and subtropical waters. In the *Albatross* bottom samples it occurred only in those from the Caribbean, where it seldom occurred in any considerable numbers. It is recorded from the coast of the British Isles in the warm area of the Faroe Channel (Pearcey), and a single specimen was found at 750 fathoms (1,370 meters) off the southwest of Ireland (Wright).

The plate of figures of this species is from the *Challenger* report, as all the bottom samples are largely without spines.

Hastigerina pelagica—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19903	U.S.N.M.	1	H47.....	17 46 30 N.; 65 10 25 W..	1,482	.....	ers. eo. s.....	Rare.
19904	U.S.N.M.	3	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz. for...	Few.
19905	U.S.N.M.	1	H49.....	17 37 30 N.; 65 15 00 W..	928	.....	oz. for.....	Rare.
19906	U.S.N.M.	1	H56.....	17 44 15 N.; 65 27 50 W..	1,243	.....	eo. oz. for...	Rare.
19907	U.S.N.M.	1	H60.....	17 39 00 N.; 65 44 00 W..	578	.....	eo. s.....	Rare.
19908	U.S.N.M.	3	H62.....	17 32 40 N.; 65 52 20 W..	2,017	.....	eo. s.....	Few.

Genus CANDEINA D'Orbigny, 1839.

Candeina D'Orbigny (type, *C. nitida* D'Orbigny), in De la Sagra, Hist. Fis. Pol. Nat. Cuba, 1839, "Foraminifères," p. 107.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 622.—Chapman, The Foraminifera, 1902, p. 209.

Description.—Test generally trochoid, usually with the spire somewhat compressed and the later chambers often irregular; chambers numerous, rapidly increasing in size as added, inflated; wall usually clear and translucent, in old-age specimens occasionally thickened and opaque; apertures numerous, elliptical in form, placed in a somewhat regular manner along the sutural lines between the chambers.

This genus described by D'Orbigny in his Cuban Monograph is often abundant in some of the bottom samples of the West Indian region, especially in the Caribbean. It is recorded from the other great ocean basins, but never seems to be abundant elsewhere than in the West Indian region from which it was first described.

In spite of its being in general form like certain other members of the Globigerinidae, its early development occasionally has very much the character of some of the Rotaliidae. The early chambers are often of a dark-brown color, such as is found in numerous genera of the Rotaliidae, and there seems to be no real reason why it should not be placed in that family rather than in the Globigerinidae.

CANDEINA NITIDA D'Orbigny.

Plate 5, fig. 1.

Candeina nitida D'Orbigny, in De la Sagra, Hist. Fis. Pol. Nat. Cuba, 1839, "Foraminifères," p. 108, pl. 2, figs. 27, 28; Foram. Foss. Bass. Tert. Vienne, 1846, p. 193, pl. 21, fig. 28.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 19, 1882, p. 89, pl. 6, figs. 187–189.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 622, pl. 82, figs. 13–20.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 373, pl. 13, fig. 57.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 39.—Goës, Kongl. Svensk. Vet. Akad. Handl., Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 68.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 325, pl. 71, fig. 3.—Rhumbler, in Brandt, Nordisches Plankton, vol. 14, 1900, p. 31, fig. 33.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 404.—Millett, Journ. Roy. Micr. Soc., 1903, p. 692, pl. 7, figs. 2*a–c*.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 156.—Chapman, Subantarctic Ids. New Zealand, 1909, p. 352; Journ. Linn. Soc. Zool., vol. 30, 1910, p. 419.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 16, pl. 11, fig. 1.—Heron-Allen and Earland, Trans. Zool. Soc. London, vol. 20, 1915, p. 682.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 152.—Cushman, Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 296.

Description.—Test composed of numerous inflated chambers in a trochoid spiral, rather rapidly increasing in size as added; wall smooth, finely punctate; sutures depressed; aperture consisting of a series of rounded elliptical openings at the junction of the chambers along the sutures.

Diameter usually less than 1 mm.

Distribution.—The map of distribution of the *Albatross* specimens is an interesting one. The largest number of stations are from the Caribbean and also by far the largest number of specimens are from this same region. Specimens occur at the stations south of the Equator in tropical waters of the coast of Brazil. There are also a very few specimens from scattered stations along the Florida coast and northward as far as the Carolina coast, but no specimens have been noted northward from Cape Hatteras.

The species was originally described by D'Orbigny from shore sands of Cuba and it is probably found in such conditions throughout the West Indies, for it is a pelagic species. The adaptation of the nearly spherical form and instead of one large aperture the large number of elliptical openings along the sutures allowing free access of the protoplasmic contents to the exterior are both for pelagic conditions.

There are numerous records for this species from other parts of the world, but the general West Indian region seems to be its typical habitat.

Candeina nitida—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19875	U.S.N.M.	1	D2117...	15 24 20 N.; 63 31 30 W..	683	39.8	yl. m.....	Rare.
19876	U.S.N.M.	1	D2150...	13 34 45 N.; 81 21 10 W..	382	45.8	wh. crs. s....	Rare.
19877	U.S.N.M.	1	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Rare.
19878	U.S.N.M.	2	D2644...	25 40 00 N.; 80 00 00 W..	193	43.4	gy. s.....	Rare.
19879	U.S.N.M.	1	D2648...	25 53 00 N.; 80 03 30 W..	84	.....	gn. m.....	Rare.
19880	U.S.N.M.	10+	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Abundant.
19881	U.S.N.M.	1	D2668...	30 58 30 N.; 79 38 30 W..	294	46.3	gy. s.....	Rare.
19882	U.S.N.M.	1	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Rare.
19883	U.S.N.M.	1	D2679...	32 40 00 N.; 76 40 30 W..	782	38.6	lt. gy. oz....	Rare.
19884	U.S.N.M.	3	D2751...	16 54 00 N.; 63 12 00 W..	687	40.0	bu. glob. oz.	Few.
19885	U.S.N.M.	1	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Rare.
19886	U.S.N.M.	10+	D2756...	03 22 00 S.; 37 49 00 W...	417	40.5	gy. sp.....	Abundant.
19887	U.S.N.M.	3	D2758...	06 59 00 S.; 34 47 00 W...	20	79.0	brk. sh.....	Few.
19888	U.S.N.M.	2	D2761...	15 39 00 S.; 38 32 54 W...	818	39.0	pter. oz.....	Rare.
19889	U.S.N.M.	6	D2763...	24 17 00 S.; 42 48 30 W...	671	37.9	br. glob. oz..	Few.
19890	U.S.N.M.	1	H47.....	17 46 30 N.; 65 10 25 W..	1,482	.....	crs. co. s.....	Rare.
19891	U.S.N.M.	10+	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz. for....	Abundant.
19892	U.S.N.M.	10+	H49.....	17 37 30 N.; 65 15 00 W..	928	.....	oz. for.....	Abundant.
19893	U.S.N.M.	10+	H56.....	17 44 15 N.; 65 27 50 W..	1,243	.....	co. oz. for....	Abundant.
19894	U.S.N.M.	10+	H57.....	17 49 06 N.; 65 29 00 W..	2,188	.....	oz. for.....	Abundant.
19895	U.S.N.M.	10+	H58.....	17 45 20 N.; 65 35 35 W..	1,345	.....	oz. for.....	Abundant.
19896	U.S.N.M.	10+	H60.....	17 39 00 N.; 65 44 00 W..	578	.....	co. s.....	Abundant.
19897	U.S.N.M.	10+	H62.....	17 32 40 N.; 65 52 20 W..	2,017	.....	co. s.....	Abundant.
19898	U.S.N.M.	10+	H80.....	13 56 35 N.; 63 02 00 W..	684	.....	gy. m.....	Abundant.
19899	U.S.N.M.	1	H121....	16 36 20 N.; 66 41 00 W..	2,501	.....	choc. glob.oz	Rare.
19900	U.S.N.M.	10+	H189....	17 42 30 N.; 74 40 00 W..	803	.....	bu. m.....	Abundant.

Genus SPHAEROIDINA D'Orbigny, 1826.

Sphaeroidina D'Orbigny (type, *S. bulloides* D'Orbigny), Ann. Sci. Nat., vol. 7, 1826, p. 267.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 619.—Chapman, The Foraminifera, 1902, p. 208.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 17.

Description.—Test composed of a few chambers arranged in an irregular spire, the later chambers especially much inflated, increasing rapidly in size and embracing, a few only visible from the exterior; wall perforate; aperture an arched opening at or near the inner margin of the chamber, often with a calcareous, toothlike process partially closing the opening.

According to Chapman, the genus ranges back to the Cretaceous, but in the Tertiary it becomes more abundant.

The two common recent species are very unlike.

SPHAEROIDINA BULLOIDES D'Orbigny.

Plate 7, figs. 1–6.

Sphaeroidina bulloides D'Orbigny, Ann. Sci. Nat., vol. 7, 1826, p. 267, No. 1; Modeles, No. 65.—Parker, Jones, and B. H. Brady, Ann. Mag. Nat. Hist., ser. 3, vol. 16, 1865, p. 29, pl. 2, fig. 58.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 19, 1882, p. 89, pl. 60, figs. 190–193.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 620, pl. 84, figs. 1–7; Journ. Roy. Micr. Soc., 1887, p. 917.—H. B. Brady, Parker, and Jones, Trans. Zool. Soc. London, vol. 12, 1888, p. 226, pl. 45, figs.

9–11.—Wright, Ann. Mag. Nat. Hist., vol. 4, ser. 6, 1889, p. 449.—Pearcey, Trans. Glasgow Nat. Hist., Soc., vol. 2, 1890, p. 178.—Burrows, Sherborn, and Bailey, Journ. Roy. Micr. Soc., 1890, p. 562, pl. 11, figs. 20, 21.—Wright, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 489.—Fornasini, Mem. Accad. Sci. Ist. Bologna, ser. 5, vol. 3, 1893, p. 430, pl. 2, fig. 13.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 375, pl. 13, figs. 48, 49.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 25, 1894, p. 87, pl. 14, fig. 770.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 38.—Goës, Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 67.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 325, pl. 71, fig. 1.—Chapman, Quart. Journ. Geol. Soc., vol. 54, 1898, p. 555.—Millett, Journ. Roy. Micr. Soc., 1903, p. 692.—Chapman, Trans. New Zealand Inst., vol. 38, 1905, p. 101.—Earland, Journ. Quekett Micr. Club, ser. 2, vol. 9, No. 57, 1905, p. 219.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 155.—Sidebottom, Mem. Proc. Manchester Lit. Philos. Soc., vol. 52, No. 13, 1908, p. 5, pl. 1, fig. 11.—Chapman, Subantarctic Ids. New Zealand, 1909, p. 351; Journ. Linn. Soc. Zool., vol. 30, 1910, p. 418; Zool. Res. "Endeavour," pt. 3, 1912, p. 311.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 18, pl. 10, fig. 7; pl. 12, fig. 1.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 151.—Cushman, Proc. U. S. Nat. Mus., vol. 56, 1919, p. 622; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 297.

Description.—Test subspherical, the exterior usually formed by the last three chambers, entirely covering the earlier chambers, which are irregularly spiral; sutures very slightly depressed; wall smooth and polished, thick, minutely perforate; aperture comparatively small, consisting of an arched semicircular opening, usually nearly closed by a broad flat semicircular tooth.

Diameter up to about 1 mm.

Distribution.—While specimens of this species occur in the *Albatross* dredgings from the coast of Brazil to the latitude of Cape Cod, the main distribution seems to be near the latter locality. There are scattered specimens, as the table shows from off Brazil, the Caribbean, and the Gulf of Mexico; but the great mass of records are in the region between Cape Hatteras and Cape Cod, on the northeastern coast of the United States.

The species is apparently not known as a pelagic one. While it has in general a spherical form, there are no secondary openings and the single aperture is nearly closed by a large flat tooth. This does not correspond with the character of free accessibility of the protoplasm to the surface seen in most pelagic species.

Sphaeroidina bulloides—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19817	U.S.N.M.	1	D2003...	37 16 30 N.; 74 20 36 W..	641	.....	.....	Rare.
19818	U.S.N.M.	1	D2096...	39 22 20 N.; 70 52 20 W..	1,451	37.5	glob. oz.....	Rare.
19819	U.S.N.M.	1	D2115...	35 49 30 N.; 74 34 45 W..	843	39.0	m., fne. s....	Rare.
19820	U.S.N.M.	1	D2140...	17 36 10 N.; 76 46 05 W..	966	39.7	s.....	Rare.
19821	U.S.N.M.	1	D2189...	39 49 30 N.; 70 26 00 W..	600	39.7	gn. m., s....	Rare.
19822	U.S.N.M.	1	D2202...	39 38 00 N.; 71 39 45 W..	515	39.1	gn. m.....	Rare.
19823	U.S.N.M.	10+	D2203...	39 34 15 N.; 71 41 15 W..	705	38.9	gn. m., s....	Abundant.
19824	U.S.N.M.	5	D2204...	39 30 30 N.; 71 41 30 W..	728	39.1	br. m.....	Few.
19825	U.S.N.M.	2	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Rare.
19826	U.S.N.M.	1	D2208...	39 33 00 N.; 71 16 15 W..	1,178	38.4	gn. m.....	Rare.
19827	U.S.N.M.	1	D2212...	39 59 30 N.; 70 30 45 W..	428	40.0	gn. m.....	Rare.
19828	U.S.N.M.	5	D2217...	39 47 20 N.; 69 34 15 W..	924	38.1	gy. m.....	Few.
19829	U.S.N.M.	3	D2230...	38 27 00 N.; 73 02 00 W..	1,168	36.8	gy. oz.....	Few.
19830	U.S.N.M.	6	D2231...	38 29 00 N.; 73 09 00 W..	965	36.8	gy. oz.....	Common.
19831	U.S.N.M.	10+	D2234...	39 09 00 N.; 72 03 15 W..	810	38.6	gn. m.....	Abundant.
19832	U.S.N.M.	10+	D2242...	40 15 30 N.; 70 27 00 W..	58	51.4	gn. m.....	Abundant.
19833	U.S.N.M.	1	D2262...	39 54 45 N.; 69 29 45 W..	250	41.6	gn. m., s....	Rare.
19834	U.S.N.M.	1	D2335...	23 10 39 N.; 82 20 21 W..	204	.....	.....	Rare.
19835	U.S.N.M.	1	D2377...	29 07 30 N.; 88 08 00 W..	210	67.0	gy. m.....	Rare.
19932	U.S.N.M.	1	D2385...	28 51 00 N.; 88 18 00 W..	730	40.1	gy. m.....	Rare.
19836	U.S.N.M.	2	D2530...	40 53 30 N.; 66 24 00 W..	956	38.4	gy. oz.....	Rare.
19933	U.S.N.M.	1	D2531...	40 42 00 N.; 66 33 00 W..	852	38.4	gy. m.....	Rare.
19837	U.S.N.M.	1	D2534...	40 01 00 N.; 67 29 15 W..	1,231	47.8	gy. oz.....	Rare.
19838	U.S.N.M.	1	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Rare.
19839	U.S.N.M.	3	D2547...	39 54 30 N.; 70 20 00 W..	390	39.6	gn. m.....	Few.
19840	U.S.N.M.	9	D2550...	39 44 30 N.; 70 30 45 W..	1,081	38.5	br. m.....	Common.
19841	U.S.N.M.	1	D2552...	39 47 07 N.; 70 35 00 W..	721	38.5	br. m.....	Rare.
19842	U.S.N.M.	1	D2564...	39 22 00 N.; 71 23 30 W..	1,390	37.3	gy. oz.....	Rare.
19934	U.S.N.M.	5	D2581...	39 43 00 N.; 71 34 00 W..	394	.....	gn. m.....	Few.
19935	U.S.N.M.	5	D2584...	39 05 30 N.; 72 23 20 W..	541	39.5	gn. m.....	Few.
19936	U.S.N.M.	7	D2677...	32 39 00 N.; 76 50 30 W..	478	39.3	gn. m.....	Common.
19937	U.S.N.M.	2	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Rare.
19938	U.S.N.M.	1	D2680...	39 50 00 N.; 70 26 00 W..	555	.....	.....	Rare.
19939	U.S.N.M.	7	D2710...	40 06 00 N.; 68 01 00 W..	984	.....	gn. m.....	Common.
19940	U.S.N.M.	1	D2739...	37 34 30 N.; 73 58 00 W..	811	38.2	gy. m.....	Rare.
19941	U.S.N.M.	1	D2751...	16 51 00 N.; 63 12 00 W..	687	40.0	bu. glob. oz.	Rare.
19942	U.S.N.M.	2	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Rare.
19943	U.S.N.M.	2	D2761...	15 39 00 S.; 38 32 54 W..	818	39.0	pter. oz.....	Rare.
19944	U.S.N.M.	8	D2763...	24 17 00 S.; 42 48 30 W..	671	37.9	br. glob. oz..	Common.
19945	U.S.N.M.	1	H60.....	17 39 00 N.; 65 44 00 W..	578	.....	co. s.....	Rare.
19946	U.S.N.M.	5	H133....	11 33 20 N.; 66 19 00 W..	533	.....	gy.m.....	Few.

SPHAEROIDINA DEHISCENS Parker and Jones.

Plate 7, figs. 7, 8; plate 8, figs. 1, 2.

Sphaeroidina dehiscens Parker and Jones, Philos. Trans., vol. 155, 1865, p. 369, pl. 19, figs. 5 *a–c*.—H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 295; Rep Voy. *Challenger*, Zoology, vol. 9, 1884, p. 621, pl. 84, figs. 8–11; Journ. Roy. Micr. Soc., 1887, p. 917.—Egger, Abh. kön bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 376, pl. 13, figs. 58, 59.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 38.—Goës, Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 67.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 155.—Chapman, Journ. Linn. Soc. Zool., vol. 30, 1901, p. 404.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 155.—Chapman, Journ. Linn. Soc. Zool., vol. 30, 1901, p. 404; vol. 30, 1910, p. 418.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 19, pl. 10, fig. 2; pl. 13, fig. 1.—Heron-Allen and Earland, Trans. Linn. Soc. London, ser. 2, vol. 11, 1916, p. 268; Journ. Roy. Micr. Soc., 1916, p. 49.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 152.—Cushman, Proc. U. S. Nat. Mus., vol. 56, 1919, p. 623; Publ. 291, Carnegie Inst. Washington, 1919, p. 40, pl. 14, fig. 2; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 297.

Globigerina seminulina Schwager, *Novara*-Exped., Geol. Theil, vol. 2, 1866, p. 256, pl. 7, fig. 112.

Description.—Test inflated, usually somewhat longer than broad, composed of a few chambers, the earlier ones irregularly spiral, but in the adult three chambers usually making up the entire visible portion of the test; the fully developed test is marked by fissure-like sutures, the edges of which are slightly carinate, or sometimes becoming fimbriate and nearly closing the fissure; wall thick, in the young translucent but with large perforations, in the adult usually opaque and the perforations very large and conspicuous, sometimes even making the test reticulate and rough; aperture an arched opening into the chamber from the deep fissure near its base.

Diameter up to 1 mm. but in adults sometimes exceeding this.

Distribution.—The *Albatross* records for the western Atlantic show this species well scattered over the area from off Brazil just south of the Equator to latitude 40° north. It is known as a pelagic species and its distribution thus roughly corresponds in the *Albatross* samples with the general condition of ocean-current movement in the North Atlantic.

The best developed specimens are from the Caribbean. Those from other regions are usually less well developed and represent young individuals in many cases.

The young is generally in the form of a trochoid spire, but the irregular shape is soon taken on. The smooth surface and very coarse punctae will distinguish the young from any of the species of *Globigerina*. In the young the sutures are not depressed, but as growth progresses the sutures become much depressed and finally in well-developed or senescent specimens the sutural areas become much cleft and the edges of these become fimbriate.

Sphaeroidina dehiscens—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19843	U.S.N.M.	1	D2039...	38 19 26 N.; 68 20 29 W..	2,369	.....	glob. oz.....	Rare.
19844	U.S.N.M.	1	D2052...	39 40 05 N.; 69 21 25 W..	1,098	45.0	glob. oz.....	Rare.
19845	U.S.N.M.	1	D2097...	37 56 20 N.; 70 57 30 W..	1,917	.....	glob. oz.....	Rare.
19846	U.S.N.M.	2	D2099...	37 12 20 N.; 69 39 09 W..	2,949	.....	glob. oz.....	Rare.
19847	U.S.N.M.	3	D2111...	35 09 50 N.; 74 57 40 W..	938	.....	gn. m.....	Few.
19848	U.S.N.M.	3	D2140...	17 36 10 N.; 76 46 05 W..	966	59.7	s.....	Few.
19849	U.S.N.M.	2	D2144...	9 49 00 N.; 79 31 30 W..	895	.....	gn. m.....	Rare.
19850	U.S.N.M.	1	D2150...	13 34 45 N.; 81 21 10 W..	382	[illegible]	wh. crs. s....	Rare.
19851	U.S.N.M.	1	D2225...	36 05 30 N.; 69 51 45 W..	2,512	[illegible]	yl. oz.....	Rare.
19852	U.S.N.M.	1	D2352...	22 35 00 N.; 84 23 00 W..	463	45.0	wh. co.....	Rare.
19853	U.S.N.M.	1	D2355...	20 56 48 N.; 86 27 00 W..	399	.....	yl. oz.....	Rare.
19854	U.S.N.M.	1	D2358...	20 19 00 N.; 87 03 30 W..	222	.....	fne. wh. co..	Rare.
19900	U.S.N.M.	1	D2377...	29 07 30 N.; 88 08 00 W..	210	67.0	gy. m.....	Rare.
19855	U.S.N.M.	1	D2378...	29 14 30 N.; 88 09 30 W..	68	.....	gy. m.....	Rare.
19856	U.S.N.M.	3	D2383...	28 32 00 N.; 88 06 00 W..	1,181	39.6	br. gn. m....	Few.
19857	U.S.N.M.	1	D2388...	29 24 30 N.; 88 01 00 W..	35	.....	yl. s.....	Rare.
19858	U.S.N.M.	1	D2393...	28 43 00 N.; 87 14 30 W..	525	41.1	lt. gy. m....	Rare.
19859	U.S.N.M.	2	D2399...	28 44 00 N.; 86 18 00 W..	196	51.6	gy. m.....	Rare.
19860	U.S.N.M.	1	D2415...	30 44 00 N.; 79 26 00 W..	440	45.6	ors. s.....	Rare.
19851	U.S.N.M.	4	D2416...	31 26 00 N.; 79 07 00 W..	276	53.8	brk. sh.....	Few.
19862	U.S.N.M.	1	D2562...	39 15 30 N.; 71 25 00 W..	1,434	37.3	gy. oz.....	Rare.
19863	U.S.N.M.	1	D2566...	37 23 00 N.; 68 08 00 W..	2,620	36.4	gy. oz.....	Rare.

Sphaeroidina dehiscens—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
19864	U.S.N.M.	2	D2568...	39 15 00 N.; 68 08 00 W..	1,781	36.9	gy. oz.....	Rare.
19910	U.S.N.M.	10	D2573...	40 34 18 N.; 66 09 00 W..	1,742	37.3	gy. m.....	Abundant.
19911	U.S.N.M.	1	D2586...	39 02 40 N.; 72 40 00 W..	328	40.2	dk. gy. m....	Rare.
19912	U.S.N.M.	2	D2614...	34 09 00 N.; 76 02 00 W..	168	.....	gy. s.....	Rare.
19913	U.S.N.M.	2	D2629...	23 48 40 N.; 75 10 40 W..	1,169	38.4	co. s.....	Rare.
19914	U.S.N.M.	1	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Rare.
19915	U.S.N.M.	2	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Rare.
19916	U.S.N.M.	10+	D2668...	30 58 30 N.; 79 38 30 W..	294	46.3	gy. s.....	Abundant.
19917	U.S.N.M.	9	D2677...	32 39 00 N.; 76 50 30 W..	478	39.3	gn. m.....	Common.
19918	U.S.N.M.	6	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Common.
19919	U.S.N.M.	1	D2679...	32 40 00 N.; 76 40 30 W..	782	38.6	lt. gy. oz....	Rare.
19920	U.S.N.M.	2	D2714...	38 22 00 N.; 70 17 30 W..	1,825	.....	br. oz.....	Rare.
19921	U.S.N.M.	1	D2739...	37 34 30 N.; 73 58 00 W..	811	38.2	gy. m.....	Rare.
19922	U.S.N.M.	6	D2751...	16 54 00 N.; 63 12 00 W..	687	40.0	bu. glob. oz.	Common.
19923	U.S.N.M.	2	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Rare.
19924	U.S.N.M.	2	D2756...	3 22 00 S.; 37 49 00 W..	417	40.5	gy. sp.....	Rare.
19925	U.S.N.M.	1	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz.....	Rare.
19926	U.S.N.M.	1	H57.....	17 49 06 N.; 65 29 00 W..	2,188	.....	oz. for.....	Rare.
19927	U.S.N.M.	1	H58.....	17 45 20 N.; 65 35 35 W..	1,345	.....	oz. for.....	Rare.
19928	U.S.N.M.	1	H62.....	17 32 40 N.; 65 52 20 W..	2,017	.....	co. s.....	Rare.
19929	U.S.N.M.	1	H80.....	13 56 35 N.; 63 02 00 W..	684	.....	gy. m.....	Rare.
19930	U.S.N.M.	7	H121....	16 36 20 N.; 66 41 00 W..	2,501	.....	choc.glob.oz.	Common.
19931	U.S.N.M.	9	H189....	17 42 30 N.; 74 40 00 W..	803	.....	br. m.....	Common.

Genus PULLENIA Parker and Jones, 1862.

Nonionina (part) D'Orbigny, Ann. Sci. Nat., vol. 7, 1826, p. 293.

Pullenia Parker and Jones (type, *P. sphaeroides* (D'Orbigny)), in Carpenter, Parker, and Jones, Introd. Foram., 1862, p. 184.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 614.—Chapman, The Foraminifera, 1902, p. 207.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 20.

Description.—Test composed of several chambers arranged in a planospiral or oblique nautiloid more or less involute spiral, chambers not greatly inflated, only those of the last-formed volution visible; wall smooth, perforations small and indistinct; aperture a curved opening at the base of the inner face of the chamber.

The genus is only superficially like the others of the Globigerinidae. *P. obliquiloculata* is more nearly like them than are the others, being more inflated, having a large aperture, and being rather coarsely perforate.

The other two recent species much more resemble species of *Nonionina*, but they do not have any of the characteristic complex structures of the Nummulitidae.

P. obliquiloculata is a pelagic species, as much of its structure indicates, and may really differ generically from the other two.

PULLENIA SPHAEROIDES (D'Orbigny).

Plate 8, figs. 3, 4.

Nonionina sphaeroides D'Orbigny, Ann. Sci. Nat., vol. 7, 1826, p. 293, No. 1; Modeles, No. 43.

Pullenia sphaeroides Parker and Jones, in Carpenter, Parker, and Jones, Introd. Foram., 1862, p. 184, pl. 12, fig. 12; Philos. Trans., vol. 155,

1865, p. 368, pl. 14, figs. 43*a*, *b;* pl. 17, fig. 53.—H. B. Brady, Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 615, pl. 84, figs. 12, 13, text fig. 18, p. 616.—Balkwill and Wright, Trans. Roy. Irish Acad., vol. 28, 1885, p. 348, pl. 12, figs. 28*a*, *b*.—Sherborn and Chapman, Journ. Roy. Micr. Soc., 1886, p. 756, pl. 16, fig. 10.—H. B. Brady, Journ. Roy. Micr. Soc., 1887, p. 917.—H. B. Brady, Parker, and Jones, Trans. Zool. Soc., vol. 12, 1888, p. 226, pl. 43, figs. 21, 24.—Wright, Ann. Mag. Nat. Hist., vol. 4, ser. 6, 1889, p. 449.—Pearcey, Trans. Glasgow Nat. Hist. Soc., vol. 2, 1890, p. 178.—Wright, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 489.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 372, pl. 19, figs. 30, 31.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 25, 1894, p. 87, pl. 14, figs. 771, 772.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 38.—Goës, Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 69.—Chapman, Proc. California Acad. Sci., ser. 3 (Geol.), vol. 1, 1900, p. 252, pl. 30, fig. 6.—Millett, Journ. Roy. Micr. Soc., 1903, p. 691.—Chapman, Trans. New Zealand Inst., vol. 38, 1905, p. 101.—Bagg, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 155.—Chapman, Journ. Linn. Soc. Zool., vol. 30, 1910, p. 418; Zool. Res. "Endeavour," pt. 3, 1912, p. 311.—Heron-Allen and Earland, Proc. Roy. Irish Acad., vol. 31, pt. 64, 1913, p. 106.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 20, pl. 11, fig. 2.—Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1914, p. 1026.—Chapman, Biol. Res. "Endeavour," vol. 3, pt. 1, 1915, p. 27.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 151.—Cushman, Bull. 100, vol. 4, 1921, p. 299.

Nonionina bulloides D'Orbigny, Ann. Sci. Nat., vol. 7, 1826, p. 293, No. 2; Foram. Foss. Bass. Tert. Vienne, 1846, p. 107, pl. 5, figs. 8–10.

Pullenia bulloides Reuss, Denkschr. Akad. Wiss. Wien, vol. 25, 1866, p. 150.

Description.—Test subspherical, sometimes compressed laterally, composed of numerous chambers, making three or four volutions, each consisting of four chambers, entirely embracing so that the last volution only is visible from the exterior; surface of the test smooth; wall very finely but indistinctly perforate; aperture a narrow semicircular curved slit near the base of the ventral face of the last-formed chamber and the previously formed volution.

Diameter usually less than 0.50 mm.

Distribution.—This is a rare species in the western Atlantic collections. The small size makes it easily overlooked, although it as a rule occurs in the "floatings" if at all. The few stations in the accompanying table representing the *Albatross* records show that it has usually occurred as single specimens in the material examined. The only station at which it occurred in any numbers is in cold water, and as this is not known as a pelagic species nor does it show any special adaptations for pelagic life, it may be inferred that it is most at home in deep and cold waters. The desirability of placing this species and the following one with *P. obliquiloculata* seems very questionable.

Pullenia sphaeroides—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
20242	U.S.N.M.	7	D2534...	40 01 00 N.; 67 29 15 W..	1,234	37.8	gy. oz.....	Common.
20243	U.S.N.M.	1	D2629...	23 48 40 N.; 75 10 40 W..	1,169	38.4	co. s.....	Rare.
20244	U.S.N.M.	1	D2644...	25 40 00 N.; 80 00 00 W..	193	43.4	gy. s.....	Rare.
20246	U.S.N.M.	1	D2668...	30 58 30 N.; 79 38 30 W..	194	46.3	gy. s.....	Rare.
20247	U.S.N.M,	1	D2679...	32 40 00 N.; 76 40 30 W..	782	38.6	lt. gy. oz...	Rare.
20248	U.S.N.M.	2	D2706...	41 28 30 N.; 65 35 30 W..	1,188	.....	gy. oz.....	Rare.
20245	U.S.N.M.	1	D2748...	39 31 00 N.; 71 14 30 W..	1,163	37.8	gy. m.....	Rare.
20249	U.S.N.M.	2	D2763...	24 17 00 W.; 42 48 30 W..	671	37.9	br. glob. oz..	Rare.

PULLENIA QUINQUELOBA (Reuss).

Plate 8, figs. 5–9, 11.

Nonionina quinqueloba Reuss, Zeitschr. deutsch. geol. Ges., vol. 3, 1851, p. 47, pl. 5, figs. 31*a*, *b*.

Pullenia quinqueloba H. B. Brady, Proc. Roy. Soc. Edinb., vol. 11, 1882, p. 712; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 617, pl. 84, figs. 14, 15.—Balkwill and Wright, Trans. Roy. Irish Acad., vol. 28, 1885, p. 348, pl. 12, figs. 29*a*, *b*.—H. B. Brady, Journ. Roy. Micr. Soc., 1887, p. 917.—H. B. Brady, Parker, and Jones, Trans. Zool. Soc. London, vol. 12, 1888, p. 226, pl. 43, figs. 22, 23.—Sherborn and Chapman, Journ. Roy. Micr. Soc., 1889, p. 487, pl. 11, fig. 29.—Wright, Ann. Mag. Nat. Hist., vol. 4, ser. 6, 1889, p. 449.—Pearcey, Trans. Glasgow Nat. Hist. Soc., vol. 2, 1890, p. 178.—Wright, Proc. Roy. Irish Acad., ser. 3, vol. 1, 1891, p. 489.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 373, pl. 19, figs. 28, 29.—Goës, Kongl. Svensk. Vet. Akad. Handl., vol. 25, 1894, p. 87, pl. 14, fig. 773.—Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 38.—Goës. Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 68.—Chapman, Quart. Journ, Geol. Soc., vol. 54, 1898, p. 555.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 324, pl. 70, fig. 5.—Chapman, Trans. New Zealand Inst., vol. 38, 1905, p. 101.—Earland, Journ. Quekett Micr. Club, ser. 2, vol. 9, No. 57, 1905, p. 219.—Chapman, Journ. Quekett Micr. Club, ser. 2, vol. 10, 1907, p. 133; Journ. Linn. Soc. Zool., vol. 30, 1910, p. 418.—Cushman, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 21, pl. 13, fig. 2.—Pearcey, Trans. Roy. Soc. Edinb., vol. 49, 1914, p. 1025.—Mestayer, Trans. New Zealand Inst., vol. 48, 1916, p. 129.—Chapman, British Antarctic Exped., Geology, vol. 2, 1916 (1917), p. 69.—Sidebottom, Journ. Roy. Micr. Soc., 1918, p. 151.—Cushman, Proc. U. S. Nat. Mus., vol. 56, 1919, p. 623; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 299.

Pullenia sphaeroides Parker and Jones (part), Philos. Trans., vol. 155, 1865, p. 368, pl. 17, fig. 53.

Description.—Test close coiled, planospiral, bilaterally symmetrical, biconvex, the last-formed coil usually consisting of five chambers, varying between four and six; peripheral edge broadly rounded; surface smooth, shining, the chambers very slightly inflated; sutures correspondingly depressed; aperture an elongate, narrow semicircular slit between the base of the last-formed chamber and the previous volution.

Diameter up to 0.75 mm.

Distribution.—As in the preceding species, the distribution seems to be in cold, deep waters as a rule. There is a single record from off the coast of Brazil, a very few from the Gulf of Mexico and the Caribbean, and one from off the southeastern coast of the United States. In contrast to this there is a large number of stations from the northeastern coast of the United States, in cold and deep water.

This seems, as far as the literature shows, to be a bottom-living species.

Pullenia quinqueloba—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19744	U.S.N.M.	1	D2029	39 42 00 N.; 70 47 00 W.	1,168	38.5	gy. m	Rare.
19745	U.S.N.M.	1	D2035	39 26 16 N.; 70 02 37 W.	1,362	.....	glob. oz	Rare.
19746	U.S.N.M.	1	D2041	39 22 50 N.; 68 25 00 W.	1,608	38.0	glob. oz	Rare.
19747	U.S.N.M.	1	D2052	39 40 05 N.; 69 21 25 W.	1,098	45.0	glob. oz	Rare.
20009	U.S.N.M.	1	D2174	38 15 00 N.; 72 03 00 W.	1,594	.....	gy. m	Rare.
20010	U.S.N.M.	2	D2202	39 38 00 N.; 71 39 45 W.	515	39.1	gn. m	Rare.
19748	U.S.N.M.	10+	D2204	39 30 30 N.; 71 44 30 W.	728	39.1	br. m	Abundant.
19749	U.S.N.M.	2	D2205	39 35 00 N.; 71 18 45 W.	1,073	38.1	gy. oz	Rare.
19750	U.S.N.M.	2	D2208	39 33 00 N.; 71 16 15 W.	1,178	38.4	gn. m	Rare.
19751	U.S.N.M.	2	D2212	39 59 30 N.; 70 30 45 W.	428	40.0	gn. m	Rare.
19752	U.S.N.M.	1	D2224	37 16 30 N.; 68 21 00 W.	2,574	36.8	glob. oz	Rare.
19753	U.S.R.M.	1	D2228	37 25 00 N.; 73 06 00 W.	1,582	36.8	br. m	Rare.
19754	U.S.N.M.	2	D2230	38 27 00 N.; 73 02 00 W.	1,168	36.8	gy. oz	Rare.
19755	U.S.N.M.	5	D2231	38 29 00 N.; 73 09 00 W.	965	36.8	gy. oz	Few.
19756	U.S.N.M.	2	D2234	39 09 00 N.; 72 03 15 W.	810	38.6	gn. m	Rare.
20001	U.S.N.M.	4	D2335	23 10 39 N.; 82 20 21 W.	204	.....	.....	Few.
19757	U.S.N.M.	2	D2396	28 34 00 N.; 86 48 00 W.	335	.....	gy. m	Rare.
19758	UiS.N.M.	1	D2399	28 44 00 N.; 86 18 00 W.	196	51.6	gy. m	Rare.
19759	U.S.N.M.	1	D2400	28 41 00 N.; 86 07 00 W.	169	.....	gy. m	Rare.
19760	U.S.N.M.	3	D2528	41 47 00 N.; 65 37 30 W.	677	38.7	br. s	Few.
19761	U.S.N.M.	10+	D2534	40 01 00 N.; 67 29 15 W.	1,234	37.8	gy. oz	Abundant.
19762	U.S.N.M.	3	D2535	40 03 30 N.; 67 27 15 W.	1,149	37.8	gy. oz	Few.
19763	U.S.N.M.	1	D2550	39 44 30 N.; 70 30 45 W.	1,081	38.5	br. m	Rare.
20002	U.S.N.M.	9	D2679	32 40 00 N.; 76 40 30 W.	782	38.6	lt. gy. oz	Common.
20003	U.S.N.M.	4	D2684	39 35 00 N.; 70 54 00 W.	1,106	.....	br. co	Few.
19764	U.S.N.M.	2	D2689	39 42 00 N.; 71 15 30 W.	525	.....	gn. m	Common.
20004	U.S.N.M.	4						
20005	U.S.N.M.	4	D2706	41 28 30 N.; 65 35 30 W.	1,188	.....	gy. oz	Few.
20006	U.S.N.M.	4	D2710	40 06 00 N.; 68 01 00 W.	984	.....	gn. m	Few.
20007	U.S.R.M.	1	D2713	38 20 00 N.; 70 08 30 W.	1,859	.....	br. oz	Rare.
20008	U.S.N.M.	2	D2714	38 22 00 N.; 70 17 30 W.	1,825	.....	br. oz	Rare.
19765	U.S.N.M.	2	D2721	38 56 00 N.; 72 11 30 W.	813	.....	gy. oz	Rare.
20011	U.S.N.M.	3	D2748	39 31 00 N.; 71 14 30 W.	1,163	37.8	gy. m	Few.
20012	U.S.N.M.	1	D2751	16 54 00 N.; 63 12 00 W.	687	40.0	bu. glob. oz	Rare.
20013	U.S.N.M.	1	D2761	15 39 00 S.; 38 32 54 W.	818	39.0	pter. oz	Rare.
20014	U.S.N.M.	1	H49	17 37 30 N.; 65 15 00 W.	928	.....	oz. for	Rare.
20015	U.S.N.M.	1	H80	13 56 35 N.; 63 02 00 W.	684	.....	gy. m. for	Rare.

PULLENIA OBLIQUILOCULATA Parker and Jones.

Plate 8, fig. 10.

Pullenia obliquiloculata Parker and Jones, Philos. Trans., vol. 155, 1865, p. 368, pl. 19, figs. 4*a*, *b*.—H. B. Brady, Quart. Journ. Micr. Sci., vol. 19, 1879, p. 294; Rep. Voy. *Challenger*, Zoology, vol. 9, 1884, p. 618, pl. 84, figs. 16-20.—Egger, Abh. kön. bay. Akad. Wiss. München, Cl. II, vol. 18, 1893, p. 372, pl. 13, figs. 62-64.— Chapman, Proc. Zool. Soc. London, pt. 1, 1895, p. 38.—Goës, Bull. Mus. Comp. Zoöl., vol. 29, 1896, p. 68.—Flint, Rep. U. S. Nat. Mus., 1897 (1899), p. 324, pl. 70, fig. 6.—Chapman, Journ. Linn. Soc. Zool., vol. 28, 1901, p. 404.—Mil-

LETT, Journ. Roy. Micr. Soc., 1903, p. 692.—BAGG, Proc. U. S. Nat. Mus., vol. 34, 1908, p. 155.—CHAPMAN, Journ. Linn. Soc. Zool., vol. 30, 1910, p. 418.—CUSHMAN, Bull. 71, U. S. Nat. Mus., pt. 4, 1914, p. 22, pl. 10, fig. 3; pl. 12, figs. 2, 3.—PEARCEY, Trans. Roy. Soc. Edinb., vol. 49, 1914, p. 1026.—HERON-ALLEN and EARLAND, Trans. Zool. Soc. London, vol. 20, 1915, p. 681.—SIDEBOTTOM, Journ. Roy. Micr. Soc., 1918, p, 151.—CUSHMAN, Proc. U. S. Nat. Mus., vol. 56, 1919, p. 623; Publ. 291, Carnegie Inst. Washington, 1919, p. 40; Bull. 100, U. S. Nat. Mus., vol. 4, 1921, p. 299.

Description.—Test obliquely nautiloid, subglobular, inaequilateral, the outer volution consisting of about five chambers and covering the early portion of the test entirely; chambers inflated but the sutures very slightly depressed; wall smooth, distinctly punctate, shiny; aperture elongate, narrow, curved, between the ventral face of the last-formed chamber and the adjacent volution with the chamber wall forming a rounded lip.

Diameter from 0.50 mm. to nearly 1 mm.

Distribution.—This is a truly pelagic species and its distribution is almost ocean wide. In the *Albatross* collections it is widely scattered over the region in which dredgings were made.

The coarsely punctate test and large aperture fit the species for a pelagic existence, but make it seem very different from either *P. sphaeroides* or *P. quinqueloba* in most of its characters. Their generic differences would seem to be a matter worthy of consideration.

Pullenia obliquiloculata—material examined.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		°F.		
19784	U.S.N.M.	3	D2018...	37 12 22 N.; 74 20 04 W..	788	39.0	bu. m.....	Few.
19785	U.S.N.M.	2	D2029...	39 42 00 N.; 70 47 00 W..	1,168	38.5	gy. m.....	Rare.
19786	U.S.N.M.	2	D2034...	39 27 10 N.; 69 56 20 W..	1,346	38.0	glob. oz.....	Rare.
19787	U.S.N.M.	10+	D2035...	39 26 16 N.; 70 02 37 W..	1,362	.....	glob. oz.....	Abundant.
19788	U.S.N.M.	1	D2039...	38 19 26 N.; 68 20 20 W..	2,369	.....	glob. oz.....	Rare.
19789	U.S.N.M.	2	D2041...	39 22 50 N.; 68 25 00 W..	1,608	38.0	glob. oz.....	Rare.
19790	U.S.N.M.	3	D2042...	39 33 00 N.; 68 26 45 W..	1,555	38.5	glob. oz.....	Few.
19791	U.S.N.M.	4	D2043...	39 49 00 N.; 68 28 30 W..	1,467	38.5	glob. oz.....	Few.
19792	U.S.N.M.	1	D2046...	40 02 49 N.; 68 49 00 W..	407	40.0	bu. m.....	Rare.
19793	U.S.N.M.	5	D2050...	39 42 50 N.; 69 21 20 W..	1,050	44.5	glob. oz.....	Few.
19958	U.S.N.M.	1	D2076...	41 13 00 N.; 66 00 50 W..	906	.....	bu. m.....	Rare.
19959	U.S.N.M.	2	D2097...	37 56 20 N.; 70 57 30 W..	1,917	.....	glob. oz.....	Rare.
19947	U.S.N.M.	10+	D2099...	37 12 20 N.; 69 39 00 W..	2,949	.....	glob. oz.....	Abundant.
19948	U.S.N.M.	1	D2105...	37 50 00 N.; 73 03 50 W..	1,395	41.0	glob. oz.....	Rare.
19949	U.S.N.M.	1	D2106...	37 41 20 N.; 73 03 20 W..	1,497	42.5	glob. oz.....	Rare.
19950	U.S.N.M.	6	D2109...	35 14 20 N.; 74 59 10 W..	142	50.5	bu. m.....	Common.
19951	U.S.N.M.	1	D2110...	35 12 10 N.; 74 57 15 W..	516	40.0	bu. m.....	Rare.
19952	U.S.N.M.	3	D2111...	35 09 50 N.; 74 57 40 W..	938	.....	gn. m.....	Few.
19953	U.S.N.M.	1	D2116...	35 45 23 N.; 74 31 25 W..	888	39.0	bu. m.....	Rare.
19954	U.S.N.M.	2	D2117...	15 24 20 N.; 63 31 30 W..	683	39.8	yl. m.....	Rare.
19955	U.S.N.M.	1	D2138...	17 44 05 N.; 75 39 00 W..	23	.....	co. brk. sh..	Rare.
19956	U.S.N.M.	3	D2174...	38 15 00 N.; 72 03 00 W..	1,594	.....	gy. m.....	Few.
19957	U.S.N.M.	2	D2192...	39 46 30 N.; 70 14 45 W..	1,060	38.6	gy. oz.....	Rare.
19794	U.S.N.M.	5	D2205...	39 35 00 N.; 71 18 45 W..	1,073	38.1	gy. oz.....	Few.
19795	U.S.N.M.	1	D2208...	39 33 00 N.; 71 16 15 W..	1,178	38.4	gn. m.....	Rare.
19796	U.S.N.M.	2	D2212...	39 59 30 N.; 70 30 45 W..	428	40.0	gn. m.....	Rare.
19797	U.S.N.M.	1	D2217...	39 47 20 N.; 69 34 15 W..	924	38.1	gy. m.....	Rare.
19798	U.S.N.M.	1	D2223...	37 48 30 N.; 69 43 30 W..	2,516	36.4	glob. oz.....	Rare.
19799	U.S.N.M.	6	D2224...	36 16 30 N.; 68 21 00 W..	2,574	36.8	glob. oz.....	Common.
19800	U.S.N.M.	2	D2226...	37 00 00 N.; 71 54 00 W..	2,015	36.8	glob. oz.....	Rare.

Pullenia obliquiloculata—material examined—Continued.

Cat. No.	Coll. of—	No. of specimens.	Station.	Locality.	Depth in fathoms.	Bottom temperature.	Character of bottom.	Abundance.
				° ′ ″ ° ′ ″		° F.		
19801	U.S.N.M.	1	D2262...	39 54 45 N.; 69 29 45 W..	250	41.6	gn. m., s....	Rare.
19802	U.S.N.M.	2	D2318...	24 25 45 N.; 81 46 00 W	45	75.0	co.....	Rare.
19803	U.S.N.M.	5	D2352...	22 25 00 N.; 84 23 00 W..	463	45.0	wh. co.....	Few
19766	U.S.N.M.	1	D2370...	29 18 15 N.; 85 32 00 W..	25	.....	crs. gy. s....	Rare.
19760	U.S.N.M.	5	D2377...	29 07 30 N.; 88 08 00 W..	210	67.0	gy. m.	Abundant.
19767		10+						
19768	U.S.N.M.	4	D2379...	28 00 15 N.; 87 42 00 W..	1,467	.....	yl. oz.....	Few.
19769	U.S.N.M.	9	D2381...	28 05 00 N.; 87 56 15 W..	1,330	.....	lt. br. m....	Common.
19770	U.S.N.M.	4	D2382...	28 19 45 N.; 88 01 30 W..	1,255	39.6	gy. m.....	Few.
19771	U.S.N.M.	10	D2383...	28 32 00 N.; 88 06 00 W..	1,181	39.6	br. gn. m....	Abundant.
19772	U.S.N.M.	10	D2385...	28 51 00 N.; 88 18 00 W..	730	40.1	gy. m.....	Abundant.
19773	U.S.N.M.	10	D2392...	28 47 30 N.; 87 27 00 W..	724	40.7	br. gy. m....	Abundant.
19774	U.S.N.M.	10	D2393...	28 43 00 N.; 87 14 30 W..	525	41.1	lt. gy. m....	Abundant.
19775	U.S.N.M.	10	D2394...	28 38 30 N.; 87 02 00 W..	420	41.8	gn. m.....	Abundant.
19776	U.S.N.M.	7	D2395...	28 36 15 N.; 86 50 00 W..	347	44.1	gy. m.....	Common.
19661	U.S.N.M.	7	D2396...	28 34 00 N.; 86 48 00 W..	335	.....	gy. m.....	Common.
10777	U.S.N.M.	10	D2398...	28 45 00 N.; 86 26 00 W..	227	48.6	gy. m.....	Abundant.
19778	U.S.N.M.	10	D2399...	28 44 00 N.; 86 18 00 W..	196	51.6	gy. m.....	Abundant.
19779	U.S.N.M.	10	D2400...	28 41 00 N.; 86 07 00 W..	169	.....	gy. m.....	Abundant.
19780	U.S.N.M.	1	D2405...	28 45 00 N.; 85 02 00 W..	30	.....	gy. s.....	Rare.
19781	U.S.N.M.	5	D2415...	30 44 00 N.; 79 26 00 W..	440	45.6	crs. s.....	Few.
19782	U.S.N.M.	10	D2416...	31 26 00 N.; 79 07 00 W..	276	53.8	brk. sh.....	Abundant.
19783	U.S.N.M.	4	D2420...	37 03 20 N.; 74 31 40 W..	104	47.7	bk. s.....	Few.
19804	U.S.N.M.	4	D2530...	40 53 30 N.; 66 24 00 W..	956	38.4	gy. oz.....	Few.
19805	U.S.N.M.	1	D2531...	40 42 00 N.; 66 33 00 W..	852	38.4	gy. m.....	Rare.
19806	U.S.N.M.	1	D2534...	40 01 00 N.; 67 29 15 W..	1,234	37.8	gy. oz.....	Rare.
19807	U.S.N.M.	2	D2535...	40 03 30 N.; 67 27 15 W..	1,149	37.8	gy. oz.....	Rare.
19808	U.S.N.M.	2	D2547...	39 54 30 N.; 70 20 00 W..	390	39.6	gn. m.....	Rare.
19809	U.S.N.M.	5	D2550...	39 44 30 N.; 70 30 45 W..	1,081	38.5	br. m.....	Few.
19810	U.S.N.M.	7	D2552...	39 47 07 N.; 70 35 00 W..	721	39.6	gy. oz.....	Common.
19811	U.S.N.M.	8	D2562...	39 15 30 N.; 71 25 00 W..	1,434	37.3	gy. oz.....	Common.
19812	U.S.N.M.	10	D2563...	39 18 30 N.; 71 23 30 W..	1,422	37.4	gy. oz.....	Abundant.
19813	U.S.N.M.	5	D2564...	39 22 00 N.; 71 23 30 W..	1,390	37.3	gy. oz.....	Common.
19814	U.S.N.M.	2	D2566...	37 23 00 N.; 68 08 00 W..	2,620	36.4	gy. oz.....	Rare.
19815	U.S.N.M.	10	D2568...	39 15 00 N.; 68 08 00 W..	1,781	36.9	gy. oz.....	Abundant.
19816	U.S.N.M.	4	D2572...	40 29 00 N.; 66 04 00 W..	1,769	37.8	gy. oz.....	Few.
19962	U.S.N.M.	6	D2573...	40 34 18 N.; 66 09 00 W..	1,742	37.3	gy. m.....	Common.
19963	U.S.N.M.	2	D2581...	39 43 00 N.; 71 34 00 W..	394	.....	gn. m.....	Rare.
19964	U.S.N.M.	2	D2584...	39 05 30 N.; 72 23 20 W..	541	39.5	gy. m.....	Rare.
19965	U.S.N.M.	2	D2585...	39 08 30 N.; 72 17 00 W..	542	39.0	dk. gy. m....	Rare.
19966	U.S.N.M.	7	D2586...	39 02 40 N.; 72 40 00 W..	328	40.2	dk. gy. m....	Common.
19967	U.S.N.M.	10+	D2614...	34 09 00 N.; 76 02 00 W..	168	.....	gy. s.....	Abundant.
19968	U.S.N.M.	3	D2639...	25 04 50 N.; 80 15 10 W..	56	.....	co. s.....	Few.
19969	U.S.N.M.	10+	D2641...	25 11 30 N.; 80 10 00 W..	60	69.2	co. s.....	Abundant.
19970	U.S.N.M.	5	D2643...	25 25 00 N.; 79 55 15 W..	217	42.6	gy. s.....	Few.
19971	U.S.N.M.	9	D2644...	25 40 00 N.; 80 00 00 W..	193	43.4	gy. s.....	Common.
19972	U.S.N.M.	2	D2648...	25 53 00 N.; 80 03 30 W..	84	.....	gn. m.....	Rare.
19973	U.S.N.M.	10+	D2660...	28 40 00 N.; 78 46 00 W..	504	45.7	yl. for.....	Abundant.
19974	U.S.N.M.	10+	D2668...	30 58 30 N.; 79 38 30 W..	294	46.3	gy. s.....	Abundant.
19975	U.S.N.M.	10+	D2677...	32 39 00 N.; 76 50 30 W..	478	39.3	gn. m.....	Abundant.
19976	U.S.N.M.	10+	D2678...	32 40 00 N.; 76 40 30 W..	731	38.7	lt. gy. oz....	Abundant.
19977	U.S.N.M.	10+	D2679...	32 40 00 N.; 76 40 30 W..	782	38.6	lt. gy. oz....	Abundant.
19978	U.S.N.M.	3	D2684...	39 35 00 N.; 70 54 00 W..	1,106	.....	br. c.....	Few.
19989	U.S.N.M.	5	D2710...	40 06 00 N.; 68 01 00 W..	984	.....	gn. m.....	Few.
19980	U.S.N.M.	10+	D2713...	38 20 00 N.; 70 08 30 W..	1,859	.....	br. oz.....	Abundant.
19981	U.S.N.M.	10+	D2714...	38 22 00 N.; 70 17 30 W..	1,825	.....	br. oz.....	Abundant.
19982	U.S.N.M.	5	D2716...	38 29 30 N.; 70 57 00 W..	1,631	.....	br. g.....	Few.
19983	U.S.N.M.	1	D2739...	37 34 30 N.; 73 58 00 W..	811	38.2	gy. m.....	Rare.
19984	U.S.N.M.	5	D2748...	39 31 00 N.; 71 14 30 W..	1,163	37.8	gy. m.....	Few.
19985	U.S.N.M.	10+	D2751...	16 54 00 N.; 63 12 00 W..	687	40.0	bu. glob. oz.	Abundant.
19986	U.S.N.M.	10+	D2754...	11 40 00 N.; 58 33 00 W..	880	38.0	glob. oz.....	Abundant.
19987	U.S.N.M.	10+	D2756...	3 22 00 S.; 37 49 00 W..	417	40.5	gy. m.....	Abundant.
19988	U.S.N.M.	9	D2763...	24 17 00 S.; 42 48 30 W..	671	37.9	br. glob. oz..	Common.
19989	U.S.N.M.	4	H47.....	17 46 30 N.; 65 10 25 W..	1,482	.....	crs. co. s....	Few.
19990	U.S.N.M.	1	H48.....	17 42 00 N.; 65 12 40 W..	978	.....	co. oz.....	Rare.
19991	U.S.N.M.	3	H49.....	17 37 30 N.; 65 15 00 W..	928	.....	oz. for.....	Few.
19992	U.S.N.M.	4	H56.....	17 44 15 N.; 65 27 50 W..	1,243	.....	co. oz. for...	Few.
19993	U.S.N.M.	9	H57.....	17 49 06 N.; 65 29 00 W..	2,188	.....	oz. for.....	Common.
19994	U.S.N.M.	10+	H58.....	17 45 20 N.; 65 36 35 W..	1,345	.....	oz. for.....	Abundant.
19995	U.S.N.M.	5	H60.....	17 39 00 N.; 65 44 00 W..	578	.....	co. s.....	Few.
19996	U.S.N.M.	4	H62.....	17 32 40 N.; 65 52 20 W..	2,017	.....	co. s.....	Few.
19997	U.S.N.M.	10+	H80.....	13 56 35 N.; 63 02 00 W..	684	.....	gy, m. for...	Abundant.
19998	U.S.N.M.	10+	H121....	16 36 20 N.; 66 41 00 W..	2,501	.....	choc.glob.oz.	Abundant.
19999	U.S.N.M.	10+	H133....	11 33 20 N.; 66 19 00 W..	533	.....	gy. m.....	Abundant.
20000	U.S.N.M.	6	H189....	17 42 30 N.; 74 40 00 W..	803	.....	br. m.....	Common.

EXPLANATIONS OF PLATES.

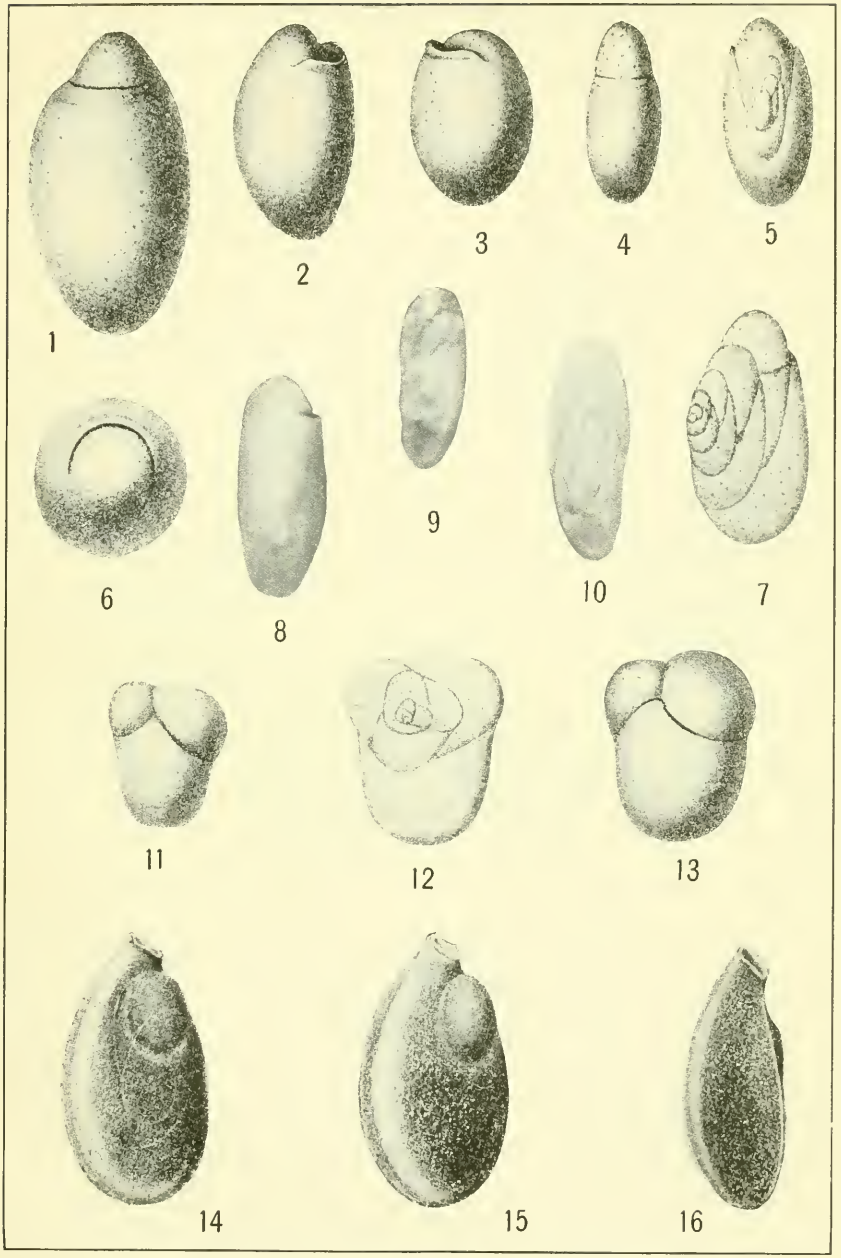
Plate 1.

Figs. 1–7. *Chilostomella ovoidea.* (After Brady.) Figures 1–4, front or side views, × 50. Figure 5, dorsal view by transmitted light, × 70. Figure 6, apertural view, × 50. Figure 7, side view by transmitted light, × 70.

8–10. *Chilostomella ovoidea.* (From photographs.) × 50. D2036. Figure 8, side view; 9, ventral view; 10, dorsal view.

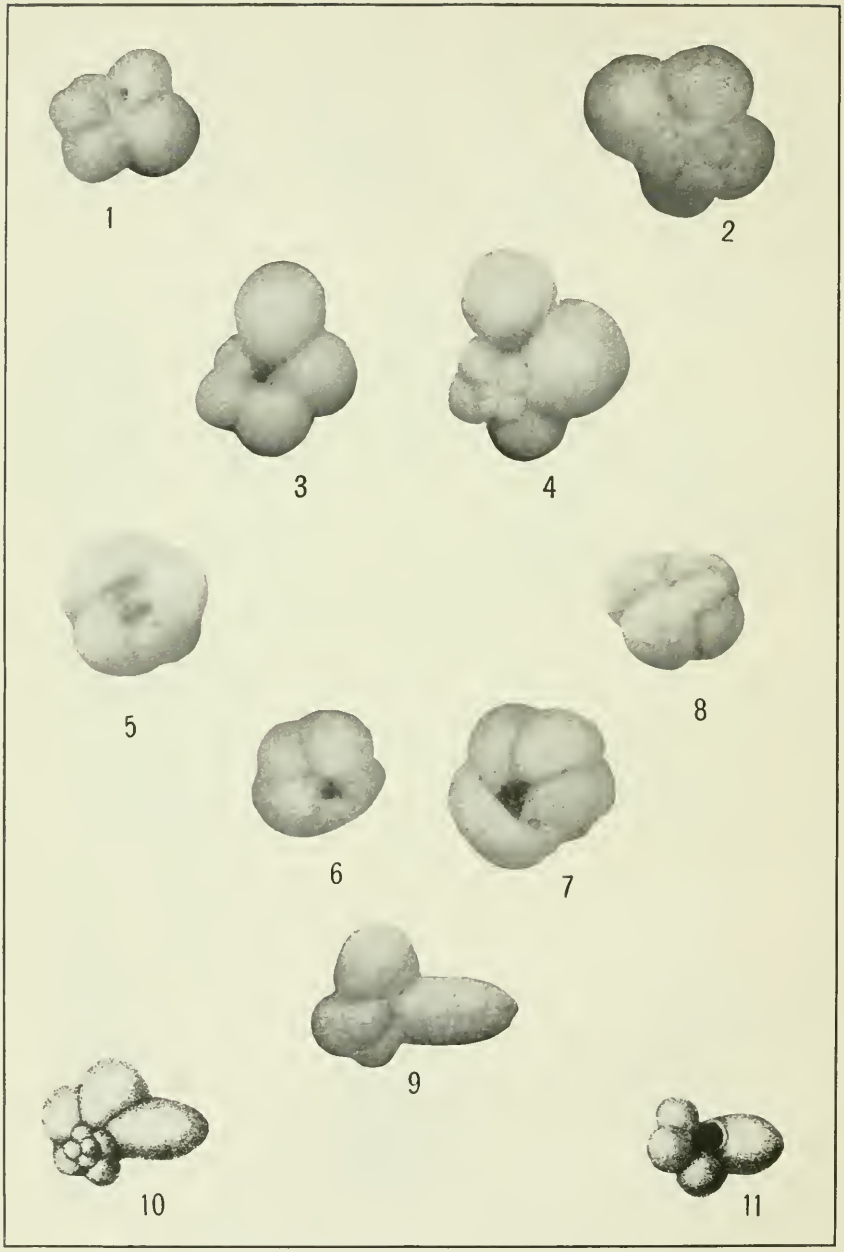
11–13. *Allomorphina trigona.* (After Brady.) Figures 11 and 13, ventral views, × 60. Figure 12, specimen viewed by transmitted light, showing the arrangement of the chambers, × 100.

14–16. *Seabrookia earlandi.* (After Heron-Allen and Earland.) × 120. Figures 14 and 15, front views; 16, side view.



CHILOSTOMELLIDAE OF THE ATLANTIC OCEAN.

FOR EXPLANATION OF PLATE SEE PAGE 46.



GLOBIGERINIDAE OF THE ATLANTIC OCEAN.

FOR EXPLANATION OF PLATE SEE PAGE 47.

PLATE 2.

FIGS. 1, 2. *Globigerina bulloides?* (From photographs.) × 50. D2226. Figure 1, ventral view; 2, dorsal view.

3, 4. *Globigerina bulloides?* (From photographs.) × 50. D2383. Figure 3, ventral view; 4, dorsal view.

5–8. *Globigerina dubia.* (From photographs.) × 40. D2313. Figures 5–7, ventral views; 8, dorsal view.

9. *Globigerina digitata.* (From photograph.) × 50. D2399. Dorsal view.

10, 11. *Globigerina digitata.* (After Brady.) × 50. Figure 10, dorsal view; 11, ventral view.

PLATE 3.

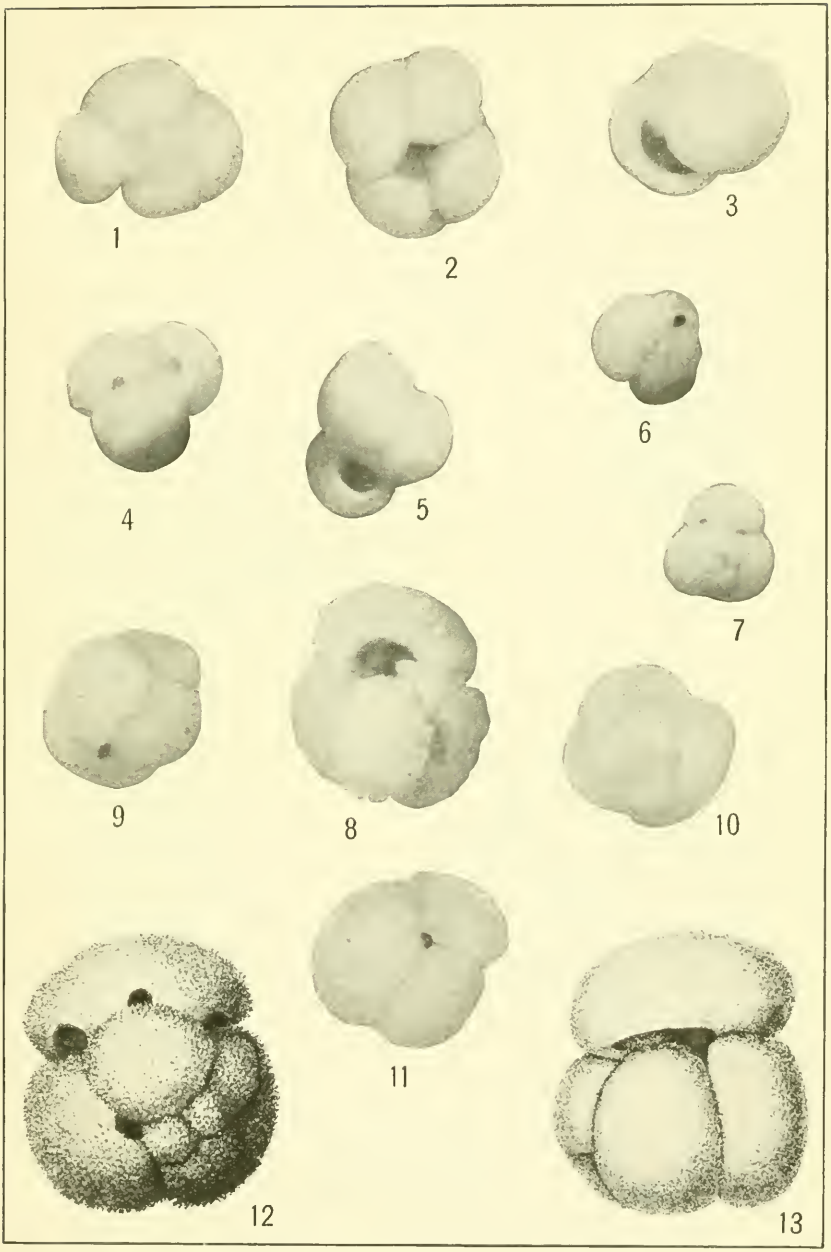
FIGS. 1–3. *Globigerina inflata.* (From photographs.) × 50. D2335. Figure 1, dorsal view; 2, ventral view; 3, side view showing aperture.

4–7. *Globigerina rubra.* (From photographs.) × 50. D2335. Figures 4 and 7, dorsal views; 5, side view showing aperture; 6, ventral view.

8. *Globigerina conglobata.* (From photograph.) × 40. D2377. Old-age specimen with thick walls.

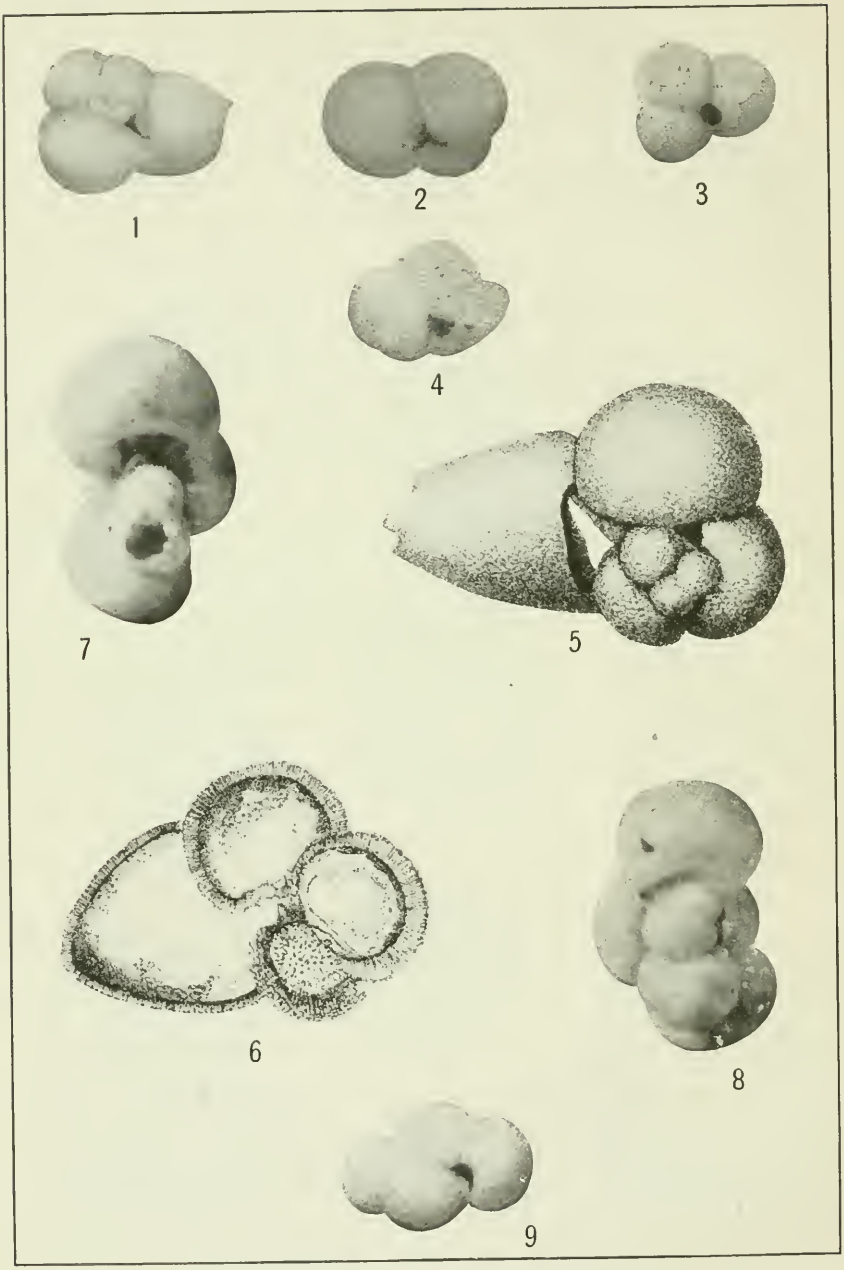
9–11. *Globigerina conglobata.* (From photographs.) × 40. D2313. Figure 9, side view; 10, dorsal view; 11, ventral view.

12, 13. *Globigerina conglobata.* (After Brady.) × 50. Figure 12, dorsal view; 13, ventral view.



GLOBIGERINIDAE OF THE ATLANTIC OCEAN.

FOR EXPLANATION OF PLATE SEE PAGE 48.



GLOBIGERINIDAE OF THE ATLANTIC OCEAN.

FOR EXPLANATION OF PLATE SEE PAGE 49.

PLATE 4.

FIGS. 1–4. *Globigerina sacculifera.* (From photographs.) × 40. D2313. Figure 1, dorsal view; figures 2–4, ventral views.

5. *Globigerina sacculifera.* (After Brady.) × 50. Dorsal view showing angular and spinose character of last-formed chamber in the adult.

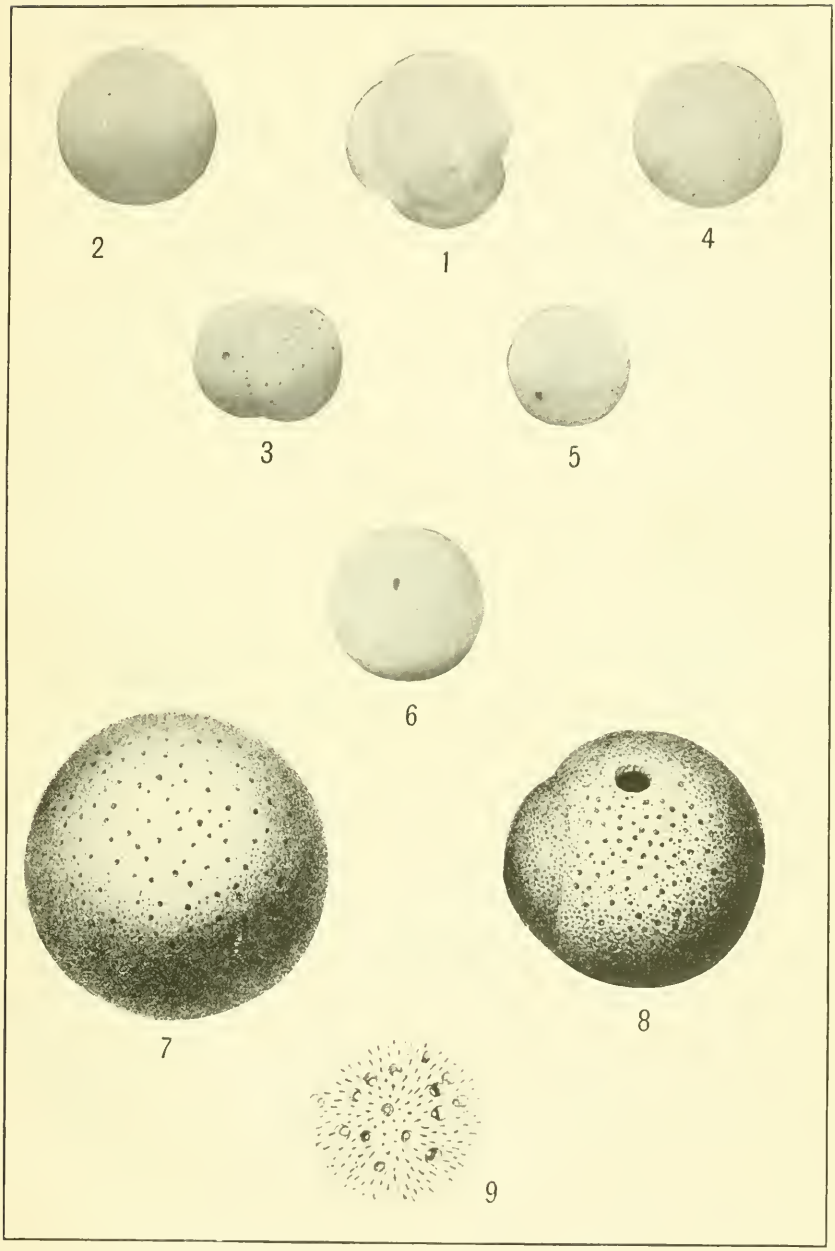
6. *Globigerina sacculifera.* (After Brady.) × 50. "Section of the shell, showing its thickness and the coarse tubulation of the walls."

7, 8. *Globigerina aequilateralis.* (From photographs.) × 40. D2377. Apertural views.

9. *Globigerina helicina?* (From photograph.) × 50. D2262.

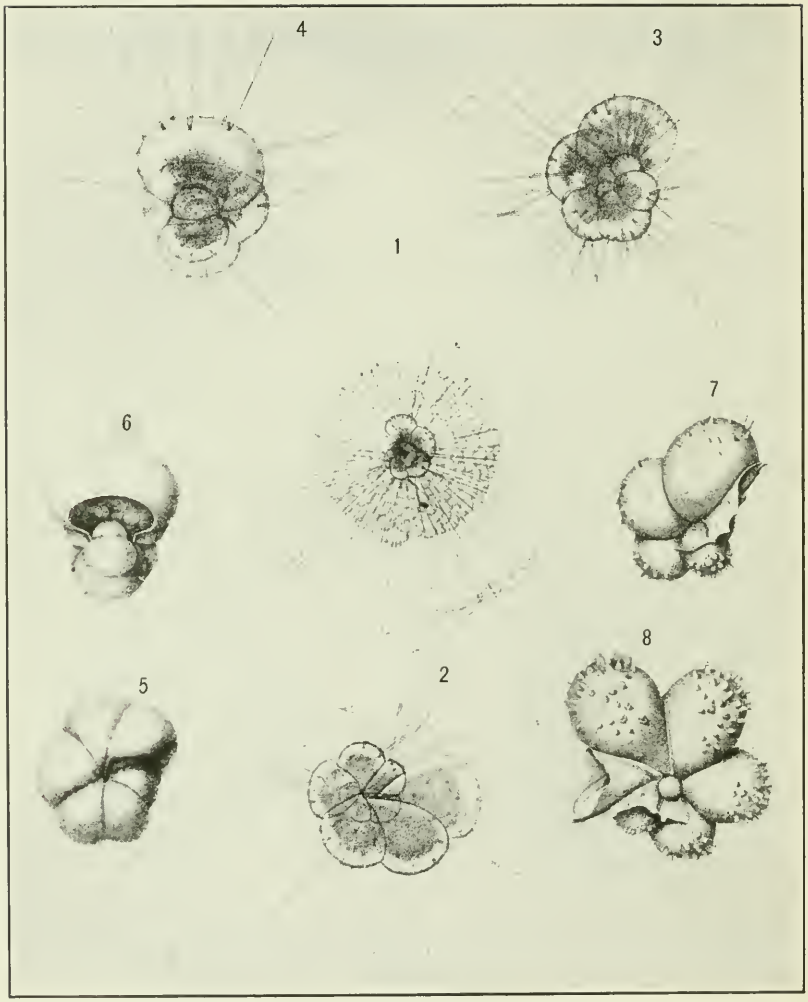
PLATE 5.

FIG. 1. *Candeina nitida.* (From photograph.) × 50. D2751. Dorsal view.
2,3. *Orbulina universa.* (From photographs.) × 30. D2377. Figure 3, specimen showing two chambers from the exterior.
4–6. *Orbulina universa.* (From photographs.) × 40. D2313.
7. *Orbulina universa.* (After Brady.) × 50. Specimen showing the single globular chamber with the numerous smaller pores.
8. *Orbulina universa.* (After Brady.) × 50. Specimen showing two chambers from the exterior, the larger one with the single large aperture near the top.
9. *Orbulina universa.* (After Brady.) × 100. Portion of the test showing the large and small perforations.



GLOBIGERINIDAE OF THE ATLANTIC OCEAN.

FOR EXPLANATION OF PLATE SEE PAGE 50.



GLOBIGERINIDAE OF THE ATLANTIC OCEAN.

FOR EXPLANATION OF PLATE SEE PAGE 51.

PLATE 6.

(After Brady.)

FIGS. 1–8. *Hastigerina pelagica.* Figure 1, living specimen, the test enveloped in a mass of vesicular protoplasm from which radiate the pseudopodia. × 35. Figures 2–4, specimens showing the peculiar spines with their serrate edges. × 38. Figures 5, 6, specimens of the smooth, broad form. × 40. Figure 5, side view; figure 6, apertural view. Figures 7, 8, specimens of the more compressed libulate form with the bases of the spines appearing on the general surface. × 40.

Plate 7.

Figs. 1–3. *Sphaeroidina bulloides.* (From photographs.) × 40. D2377. Figure 1, ventral view; 2, side view; 3, apertural view.

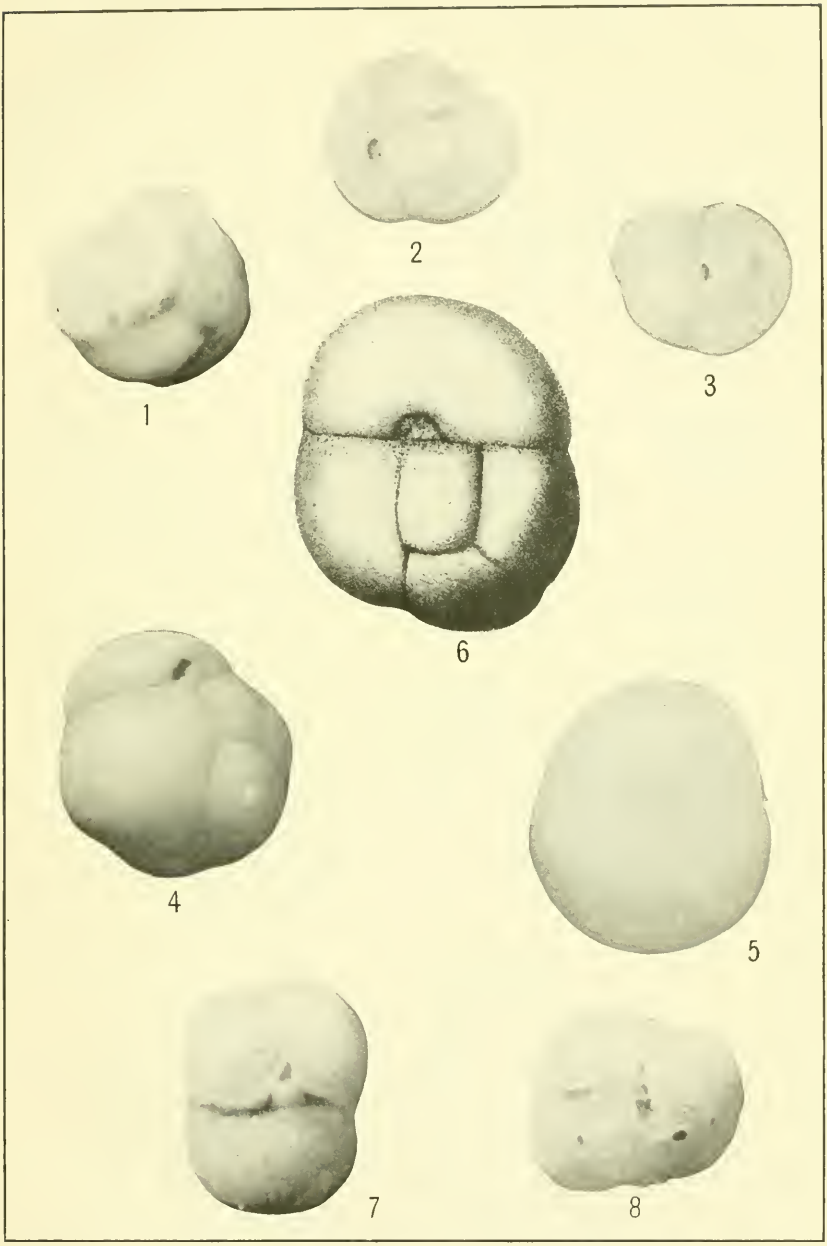
4. *Sphaeroidina bulloides.* (From photograph.) × 40. D2385.

5. *Sphaeroidina bulloides.* (From photograph.) × 40. D2531.

6. *Sphaeroidina bulloides.* (After Brady.) × 50. Apertural view.

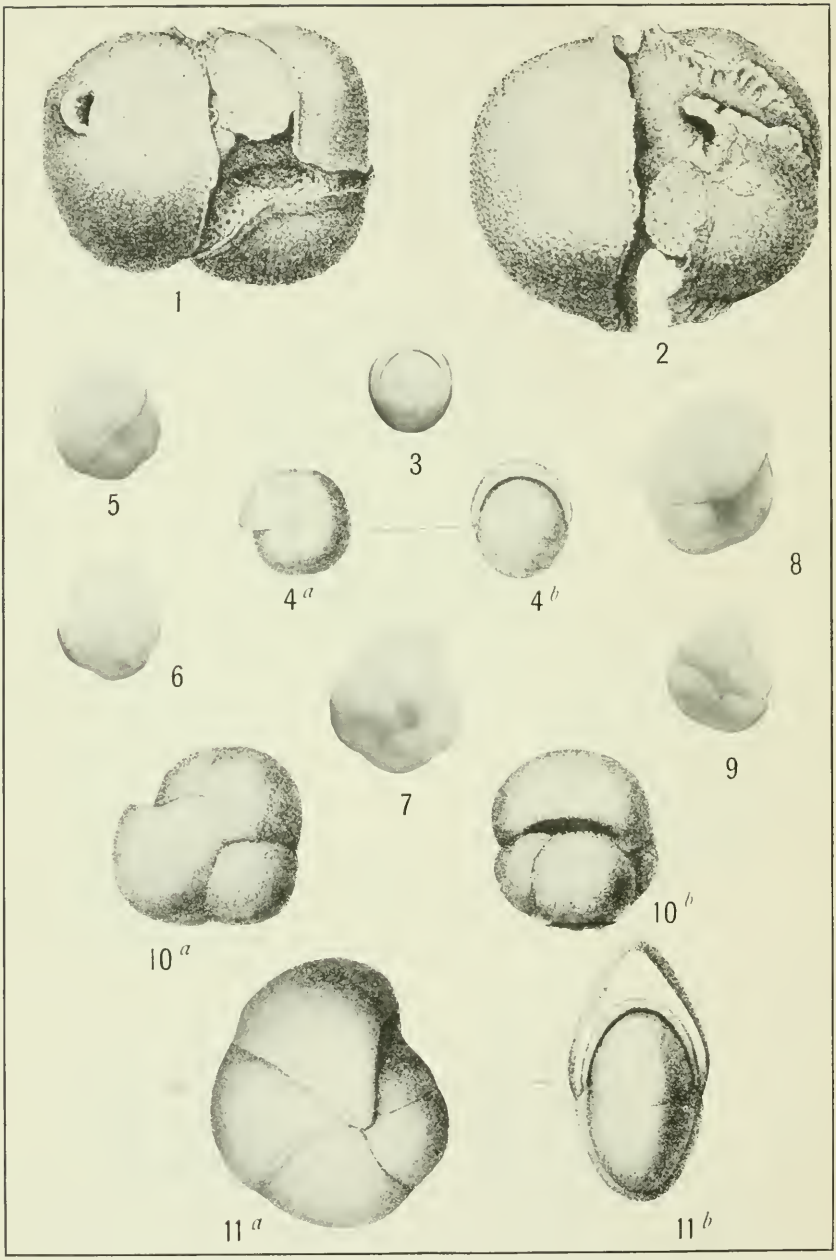
7. *Sphaeroidina dehiscens.* (From photograph.) × 40. D2751.

8. *Sphaeroidina dehiscens.* (From photograph.) × 40. D2377.



GLOBIGERINIDAE OF THE ATLANTIC OCEAN.

FOR EXPLANATION OF PLATE SEE PAGE 52.



GLOBIGERINIDAE OF THE ATLANTIC OCEAN.

FOR EXPLANATION OF PLATE SEE PAGE 53.

PLATE 8.

FIGS. 1, 2. *Sphaeroidina dehiscens.* (After Brady.) × 50. Thickwalled bottom specimens with deep reëntrants.

3. *Pullenia sphaeroides.* (From photograph.) × 50. D2534. Apertural view.

4. *Pullenia sphaeroides.* (After Brady.) × 50. *a*, side view; *b*, apertural view.

5. *Pullenia quinqueloba.* (From photograph.) × 50. D2751. Side view.

6–9. *Pullenia quinqueloba.* (From photographs.) × 50. D2335. Side views.

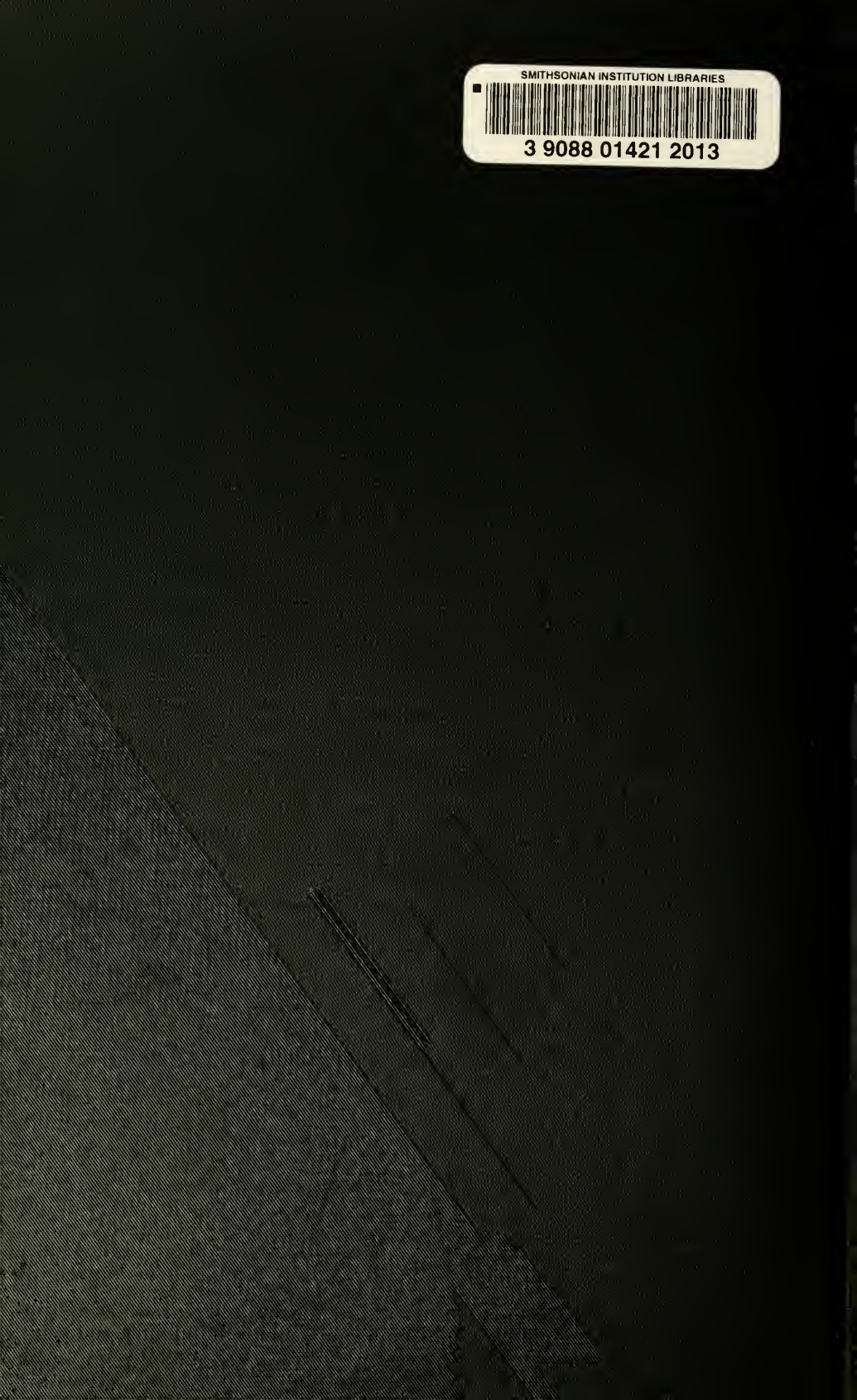
10. *Pullenia obliquiloculata.* (After Brady.) × 50. *a*, side view; *b*, apertural view.

11. *Pullenia quinqueloba.* (After Brady.) × 50. *a*, side view; *b*, apertural view.

INDEX.

	Page.
aequilateralis, Globigerina	25
Allomorphina	3
trigona	4
Aristerospira pachyderma	14
borealis, Globigerina bulloides	15
bulloides, borealis, Globigerina	15
Globigerina	7, 15
triloba	7
Nonionina	41
Pullenia	41
Sphaeroidina	36
Candeina	34
nitida	35
Cassidulina globulosa	25
Chilostomella	1
ovoidea	2
Chilostomellidae	1
concinna, Globigerina	27
conglobata, Globigerina	18
dehiscens, Sphaeroidina	38
digitata, Globigerina	11
diplostoma, Globigerina	27
dubia, Globigerina	8
dutertrei, Globigerina	11
earlandi, Millettia	5
Seabrookia	5
Globigerina	6, 33
aequilateralis	25
bulloides	7, 15
borealis	15
triloba	7
concinna	27
conglobata	18
digitata	11
diplostoma	27
dubia	8
dutertrei	11
helicina	21, 24
inflata	12
linneiana	28
ocellata	27
pachyderma	14
quadriloba	27
regularis	28
rubra	15
sacculifera	21
seminulina	38
subcretacea	8
Globigerinidae	5
Globulina porosa	32
globulosa, Cassidulina	25
Hastigerina	33

	Page
Hastigerina murrayi	33
pelagica	33
helicina, Globigerina	21, 24
inflata, Globigerina	12
linneiana, Globigerina	28
Lituola	33
pelagica	33
Millettia earlandi	5
murrayi, Hastigerina	33
nitida, Candeina	35
Nonionina	33
bulloides	41
pelagica	33
quinqueloba	42
sphaeroides	40
obliquiloculata, Pullenia	43
ocellata, Globigerina	27
Orbulina	28
porosa	32
universa	28
ovoidea, Chilostomella	2
pachyderma, Aristerospira	14
Globigerina	14
pelagica, Hastigerina	33
Lituola	33
Nonionina	33
porosa, Globulina	32
Orbulina	32
Pullenia	40
bulloides	41
obliquiloculata	43
quinqueloba	42
sphaeroides	40, 42
quadriloba, Globigerina	27
quinqueloba, Nonionina	42
Pullenia	42
regularis, Globigerina	28
rubra, Globigerina	15
sacculifera, Globigerina	21
Seabrookia	4
earlandi	5
seminulina, Globigerina	38
sphaeroides, Nonionina	40
Pullenia	40, 42
Sphaeroidina	36
bulloides	36
dehiscens	38
subcretacea, Globigerina	8
trigona, Allomorphina	4
triloba, Globigerina bulloides	7
universa, Orbulina	28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